ENGINEERING NEWS-RECORD

ANN ARBOR MICH
313 N 1 ST

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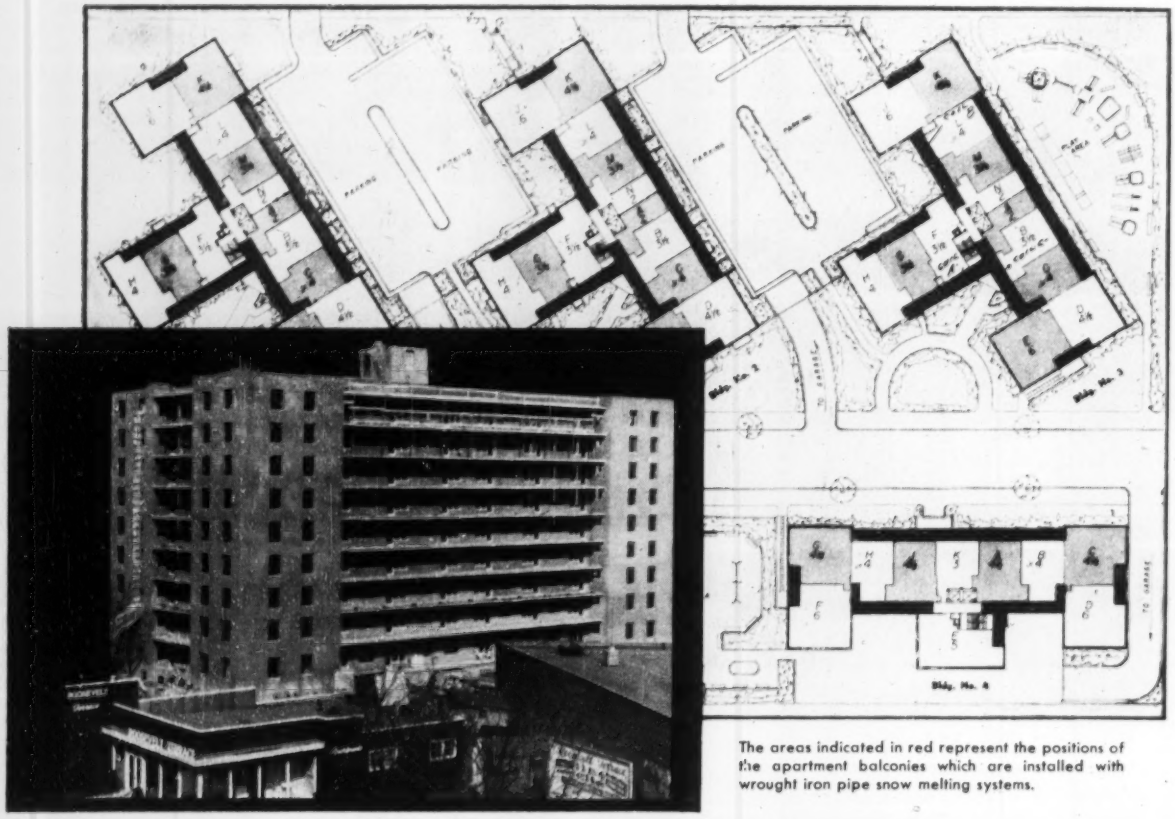
SNOW MELTING MOVES UPSTAIRS



The areas indicated in red represent the positions of the apartment balconies which are installed with wrought iron pipe snow melting systems.

WROUGHT IRON PIPE installed on outside corridors of all 9 floors at Roosevelt Terrace

Few architectural achievements have ever depended more heavily on pipe dependability in snow melting systems than the four new Roosevelt Terrace Apartments, Jamaica, New York.

Marking a complete departure from traditional design, these modern structures utilize outside corridors on all nine floors instead of conventional inside halls. Each corridor is the main artery leading from living suites to elevators and stairways. All-important to the success of this unique arrangement was a snow melting system that would effectively and continuously keep the corridors dry and clear of ice and snow during the winter months.

To make sure the occupants would not be inconvenienced with failures, and the owners would not be burdened with repairs, the designers installed corrosion-resistant wrought iron pipe.

Construction of the projects is under the supervision of Mr. Alfred L. Kaskel, President of Carol Management Corporation, 12 East 48th Street, New York City. Sales agent for the apartments is Carol Enterprise, Inc. Architect, Philip Birnbaum, N.Y.; Mechanical Engineer, Charles Wurmfeld, N.Y.

Our bulletin, *Wrought Iron Pipe for Snow Melting Systems*, discusses a variety of actual installations and answers many problems on modern snow removal methods. Write for your copy.

A. M. Byers Company, Pittsburgh, Pa. Established 1864. Boston, New York, Philadelphia, Washington, Atlanta, Chicago, St. Louis, Houston, San Francisco. Export Department: New York, N.Y. *Available throughout the world.*

BYERS

CORROSION COSTS YOU MORE THAN WROUGHT IRON

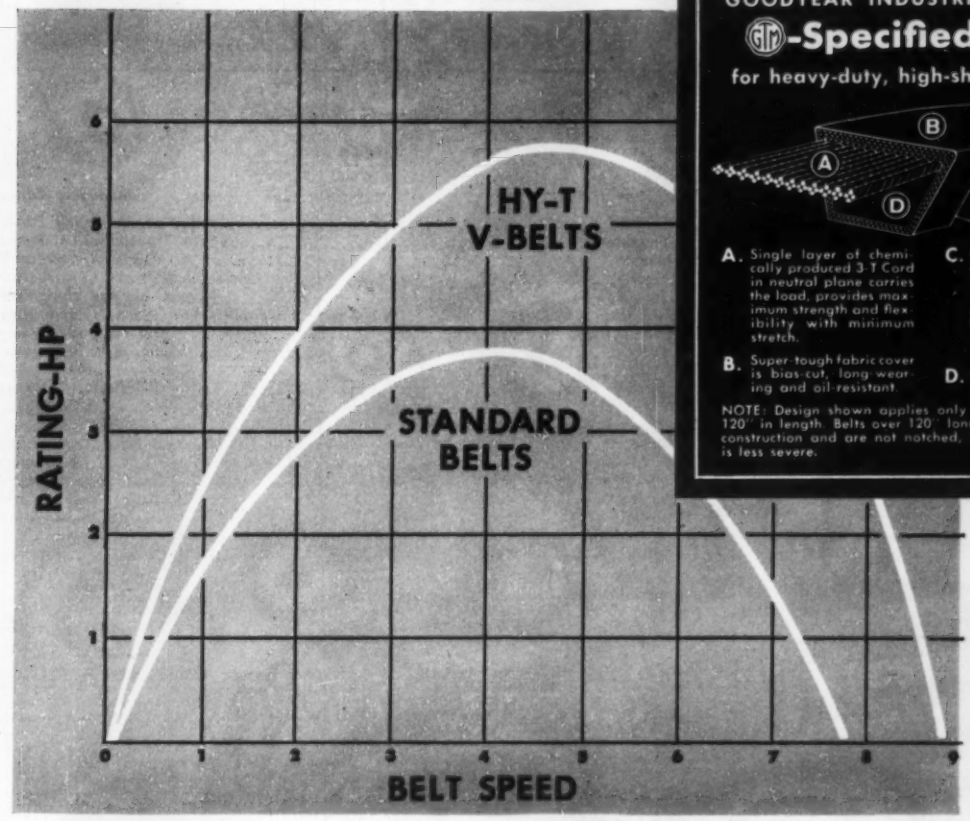
WROUGHT IRON

TUBULAR AND HOT ROLLED PRODUCTS

ELECTRIC FURNACE QUALITY STEEL PRODUCTS

TRIPLE-TEMPERED (3-T) CORD

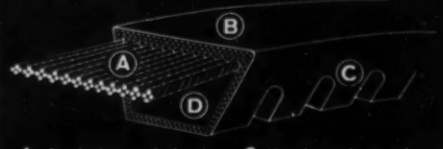
makes new, super-V-belt possible



GOODYEAR INDUSTRIAL PRODUCTS

GT-Specified HY-T V-Belts

for heavy-duty, high-shock-load drives



A. Single layer of chemically produced 3-T Cord in neutral plane carries the load, provides maximum strength and flexibility with minimum stretch.

B. Super-tough fabric cover is bias-cut, long-wearing and oil-resistant.

C. Notches close when rounding pulley to provide positive grip on sheave, open between pulleys to ventilate belt.

D. Cushion section of durable rubber.

NOTE: Design shown applies only to HY-T V-Belts under 120" in length. Belts over 120" long are of a multiple-ply construction and are not notched, since the flex problem is less severe.

3-T CORD makes the new HY-T V-Belts so strong that *seven* of these super-belts will do the work of *ten* standard belts on such tough drives as oil well mud pumps, rock crushers, metal-forming presses, pebble mills, paper and sawmill machinery—at the same cost per rated HP and with net savings on complete drives.

HY-T—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

40% HIGHER HORSEPOWER RATING without sacrifice of service life. Much higher shock-resistance. Minimum stretch. Long flex-life. Dimensional stability under all storage and operating conditions. Maximum resistance to oil, moisture, mildew and static generation. These are the properties built into the new HY-T V-Belt by the G.T.M. — Goodyear Technical Man — with the help of Triple-Tempered (3-T) Cord.

3-T Cord is the result of an exclusive and patented Goodyear process—a triple-action tempering of special synthetic cord, involving Tension, Temperature and Time, which "sets" the cord at its point of maximum strength and resilience. Using this super-strong cord as the load-carrying member, the G.T.M. built a completely new super-V-belt of completely balanced construction.

The HY-T V-Belt is designed for service on heavy-duty, high-shock-load drives or on drives where limited space previously resulted in underbelting. On such drives it has been thoroughly proved to give longer life than standard fabric belts with appreciable savings in drive and maintenance costs. For details on the super-rated HY-T V-Belt see the G.T.M. or your Goodyear Distributor. Or write Goodyear, Industrial Products Division, Akron 16, Ohio.

YOUR GOODYEAR DISTRIBUTOR *can quickly supply you with Hose, Flat Belts, V-Belts, Packing or Rolls. Look for him in the yellow pages of your Telephone Directory under "Rubber Products" or "Rubber Goods."*

GOODYEAR

THE GREATEST NAME IN RUBBER

You Get
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When You
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Over 50 years of engineering skill and production know-how from the FOUNDERS of the open-grid flooring industry.

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A "fitting" grating for every purpose.

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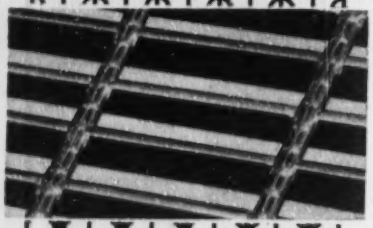
Riveted, pressure-locked and welded Irving gratings in steel; and Irving aluminum gratings in riveted and pressure-locked types, designed for your industrial flooring problems.



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Irving engineering procedures which assure precisely fabricated panels designed from your floor plan or sketch for quick, easy installation.

YOU GET...
Prompt delivery anywhere.

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Robert F. Boger
Publisher

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Campanella & Cardi Construction Co. in a rock cut.

Another Turnpike going NORTHWEST!

NOW on the MAINE TURNPIKE EXTENSION

18 NORTHWESTS

Nello Teer loading out wagons.

NOW WELL OVER 100!

● First it was the West Virginia Turnpike! Over half the Shovel and Crane equipment was Northwest! Then the New York Thruway! Well over 100 Northwests on the job! Later the Ohio Turnpike! Over 35 Northwests and more going on the job every day! —And now, Northwests are demonstrating the endorsement and faith in Northwest performance on the part of contractors building the Maine Turnpike Extension. Already 18 Northwests have been moved on to the job. You will recognize these contractors as men who know equipment.

NORTHWEST ENGINEERING COMPANY
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135 South LaSalle Street
Chicago 3, Illinois

DeMatteo Construction Co.
Quincy, Mass. —5 Northwests

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No. Anson, Me. —1 Northwest

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Portland, Me. —2 Northwests

H. E. Sargent, Inc.
Stillwater, Me. —1 Northwest

Campanella & Cardi, Inc.
Hills Grove, R. I. —2 Northwests

Yonkers Contracting Co.
Yonkers, N. Y. —4 Northwests

Nello L. Teer Co.
Durham, N. C. —2 Northwests

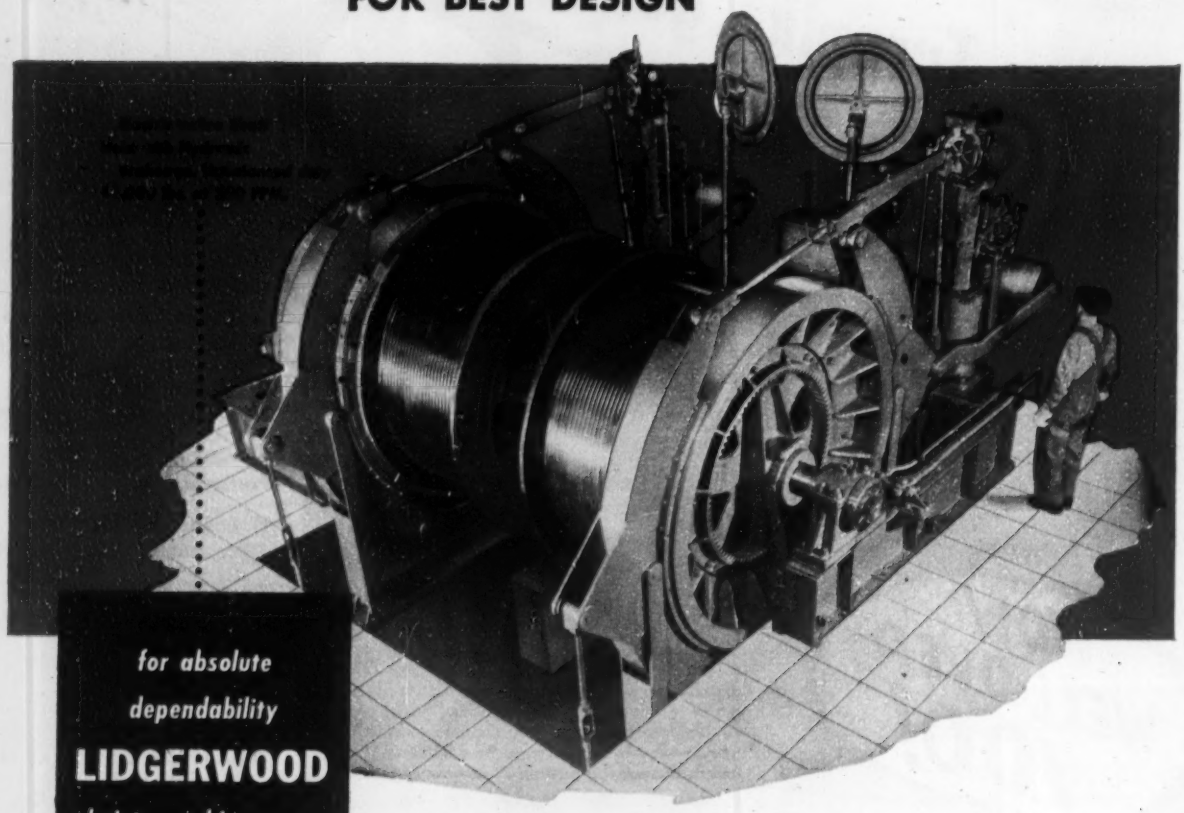
Latrobe Construction Co.
Latrobe, Pa. —1 Northwest

DeMatteo Construction Co. loading rock.

NORTHWEST

WHEN BUYING A *Hoist* REMEMBER...

BULK AND WEIGHT ARE NOT THE CRITERIA FOR BEST DESIGN



for absolute dependability

LIDGERWOOD

hoists combine more

STRENGTH

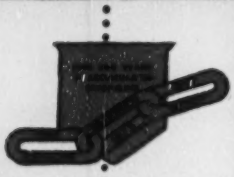
UTILITY

SAFETY

with less bulk and weight

● For over twenty years welded steel drums have been a feature of LIDGERWOOD design. Because of the consequent saving in bulk and weight, as compared with cast construction, the balance of the hoist can be made more compact and considerably lighter, with no sacrifice of strength, safety or utility.

WRITE FOR BULLETINS AND CATALOGS



Superior–Lidgerwood–Mundy Corporation

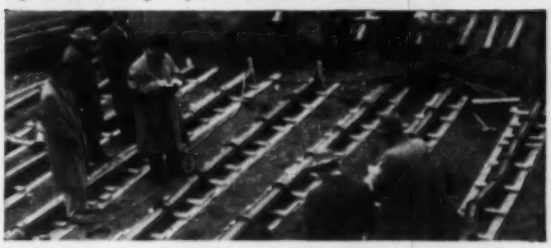
MAIN OFFICE AND WORKS – SUPERIOR, WISCONSIN

NEW YORK OFFICE – 7 Dey St., New York 7, N. Y.

1. Amvit jointed pipe will withstand hydrostatic pressures far exceeding any required.

2. On this test pressure was held at 22 pounds, at least 10 pounds higher than average requirements.

3. Not a drop of water leaked from any joints at 22 pounds pressure.



4. Accelerated test simulated many years of service. Joints still perfect.

The First Mechanical Clay Pipe Joint

NEW AMVIT JOINTED CLAY PIPE IS ROOT PROOF AND INFILTRATION PROOF

- **Withstands hydrostatic pressures that far exceed any required**
- **Install a 50-foot line in 15 minutes**
- **Flexible to compensate for trench irregularities**
- **Easily opened for installation of new laterals**
- **Jointed pipe available 4", 6" and 8"**

THE Amvit Joint is made of a new acid-resistant plastic material with rubber characteristics molded dielectrically on the pipe. The joint is "built-in", shipped to you ready for installation.

This joint is a true mechanical joint based on the ball and socket principle. A ring is molded by a special process in both the bell and on spigot, the bell ring is concave, the spigot ring convex. Since the diameter of the spigot is somewhat larger than the bell opening, the joint is under constant compression of more than 30 psi when the rings are pushed together. Nothing can force into or out of the joint.

Yet, a section of pipe can be removed from the line to install new laterals without disturbing the entire line.

For more information, write or call American Vitrified Products Company, National City Bank Building, Cleveland, Ohio, or our office nearest you.

SINCE 1900

AMERICAN

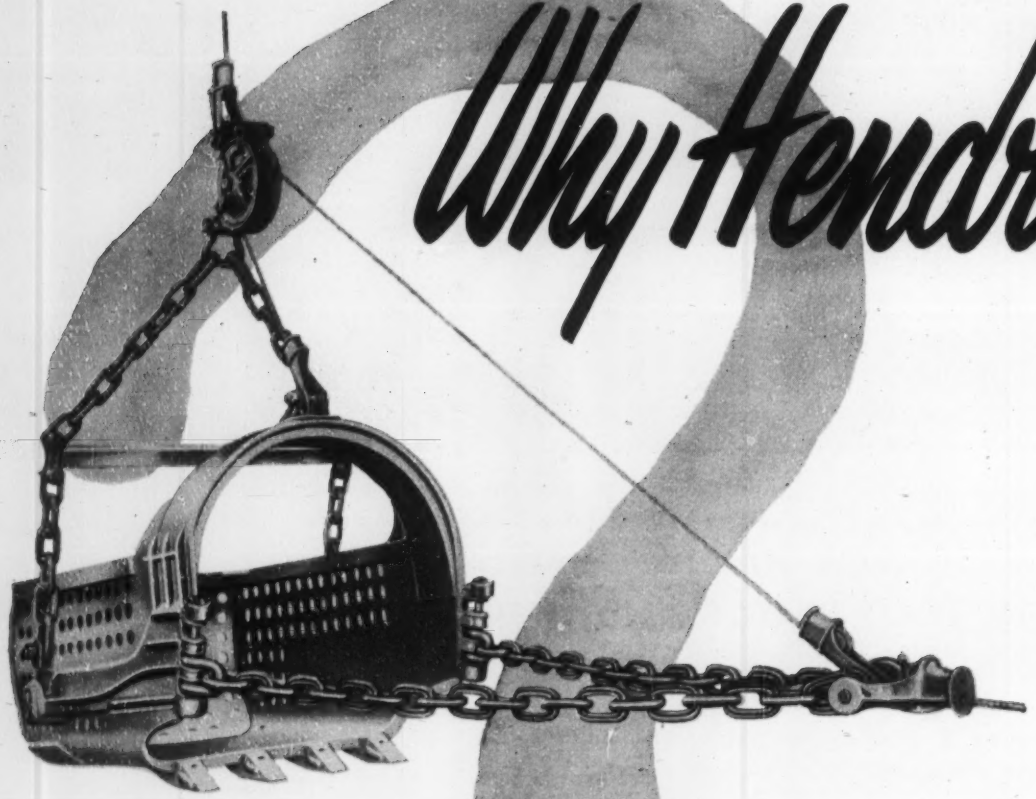
American Vitrified Products Company

CLEVELAND, OHIO

Patent Pending

PLANTS ACROSS THE NATION . . . **Brazil, Indiana • Chicago, Illinois • Cleveland, Ohio • Crawfordsville, Indiana • Detroit, Michigan • East Liverpool, Ohio • Fenton, Michigan • Grand Ledge, Michigan • Lisbon, Ohio • Los Angeles, California • Milwaukee, Wisconsin • South Bend, Indiana • Uhrichsville, Ohio**

Why Hendrix



. . . because HENDRIX from the first has devoted its entire facilities to the manufacture and development of dragline buckets. Result — sturdy dragline buckets unsurpassed for day in and day out operation on every job . . . engineered to dig more in less time for GREATER PROFITS!

A TYPE AND SIZE FOR EVERY DIGGING PURPOSE

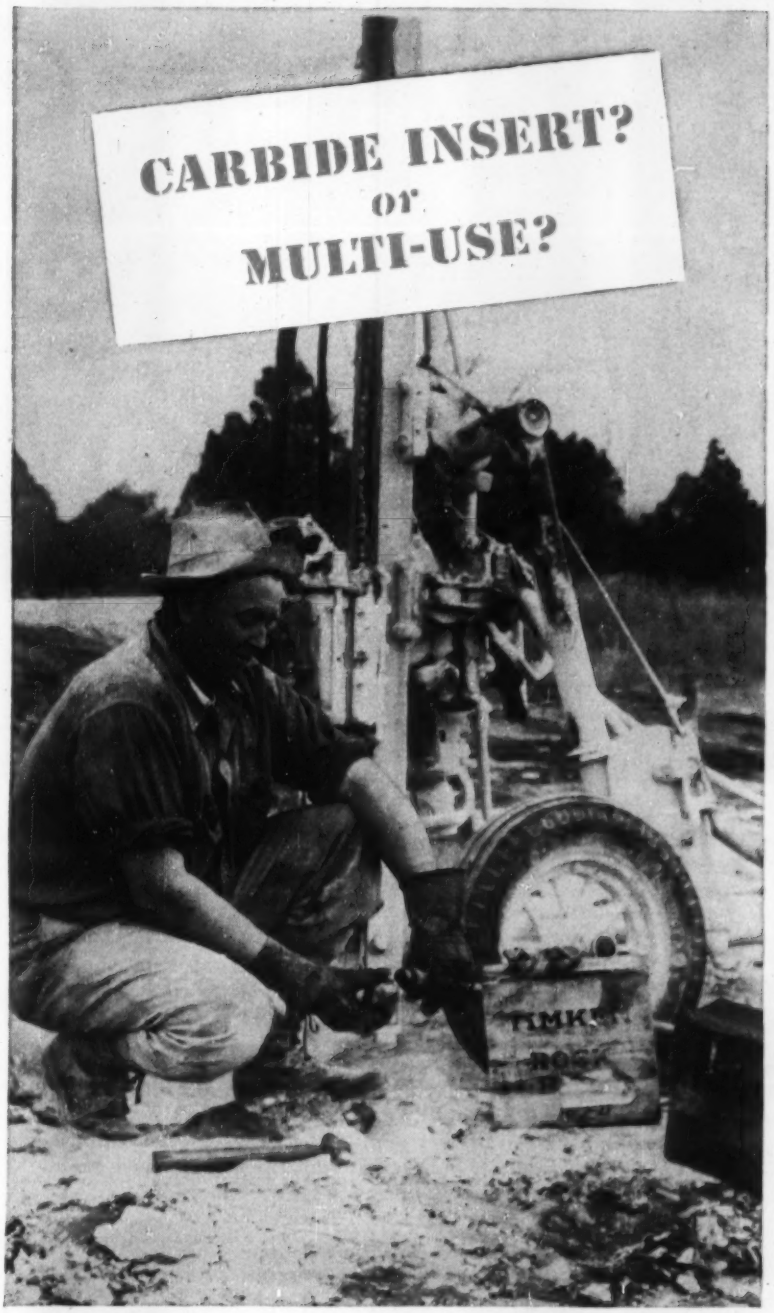
3/8 to 40 Cubic Yards

Hendrix Buckets available without perforations on special order.

HENDRIX MANUFACTURING CO., Inc.

MANSFIELD, LOUISIANA

Drilling costs in limestone quarry hit rock bottom with TIMKEN® multi-use bits



LOCATION: Pulaski, Tennessee.

OPERATING CONDITIONS: Primary drilling of blast holes in limestone.

THE Cedar Grove Lime Company in Pulaski, Tennessee, had a problem in drilling blast holes in limestone. The bits wouldn't hold up. Then they tried Timken® multi-use bits. Immediately they found that bit and steel breakage were greatly reduced. Drilling costs hit a new low.

Here's another case where Timken multi-use bits are most economical. With correct and controlled reconditioning, Timken multi-use bits give you the lowest cost per foot of hole where full increments of steel can be drilled.

However—Timken multi-use bits are not *always* the best bits to use.

In hard abrasive ground, Timken *carbide insert* bits are most economical and give fastest drilling speeds. That also holds true when you're drilling constant-gage holes, small diameter blast holes, extremely deep holes.

But whichever type of Timken bit you use, you'll be pleased to know the bits are interchangeable in the same thread series. And a wide range of different Timken bits fit the same drill steel. So if the ground changes, you can switch bits quickly and easily right on the job.

The Timken Rock Bit engineering service has over 20 years of experience in recommending the best bit for the job. They'd like to help you. Write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

...your best bet for the best bit...for <u>every</u> job

TIMKEN

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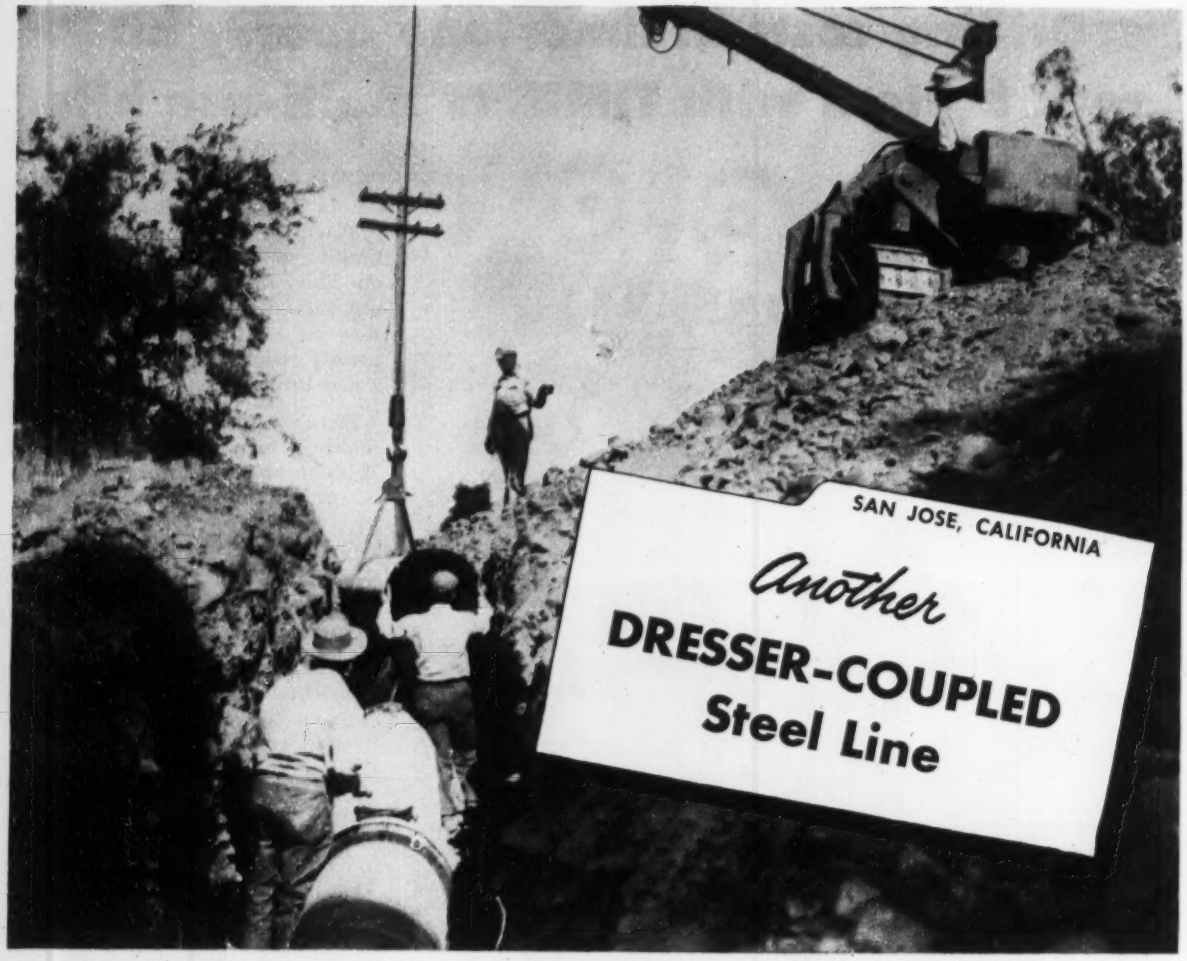


DELIVERS WATER CHEAPER

San Jose installs 12-mile Dresser-Coupled steel line . . . augments water supply from new reservoir.

Crossing the new Water Conservation District reservoir—replacing 8,000 ft. of flume, now submerged—this Dresser-Coupled steel line carries an increased water supply to San Jose, Los Gatos and Saratoga, California. Having installed over 200 miles of steel pipe since 1946, San Jose engineers are well acquainted with the many advantages of Dresser-Coupled construction.

The beam strength of lighter weight steel pipe, plus the resilience of both pipe and couplings, assures a permanently tight line unaffected by surface shock, ground shift or washouts. Rugged coatings make the line impervious to corrosion and incrustation. Glass-smooth pipe linings sustain high flow-coefficients.

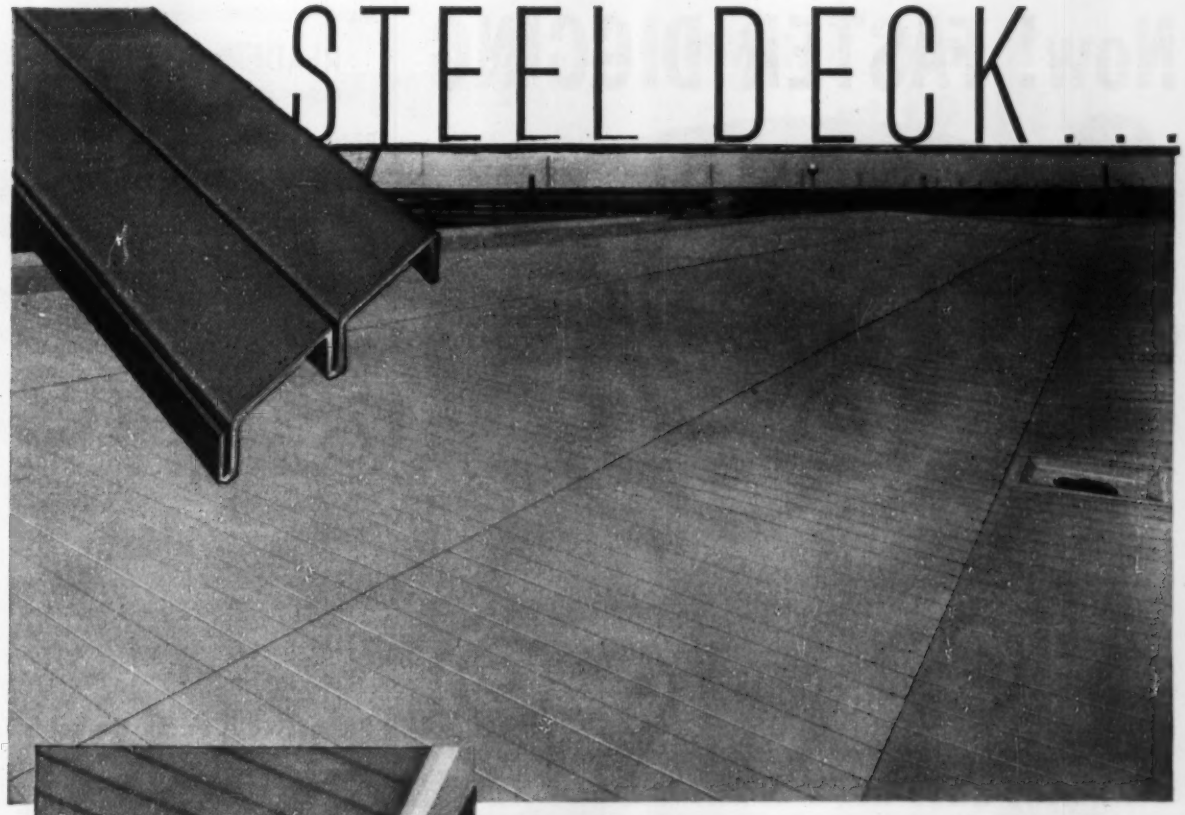
Long pipe lengths require fewer joints per mile —reduce laying costs. Small crews, with a minimum of skill, supervision and heavy equipment, make Dresser joints faster, surer—speed construction schedules. This adds up to lower cost, maintenance-free lines.

BE SURE **you get the *best* line at the *best* price. Always put steel pipe and Dresser Couplings in *your* specifications.**

DRESSER® COUPLINGS

Dresser Manufacturing Division, 69 Fisher Ave., Bradford, Pa. (One of the Dresser Industries). Warehouses: 1121 Rothwell St., Houston, Texas; 101 S. Bayshore Highway, South San Francisco, California. Sales Offices: New York, Philadelphia, Chicago, Houston, South San Francisco. In Canada: Toronto, Ont.

STEEL DECK . . .

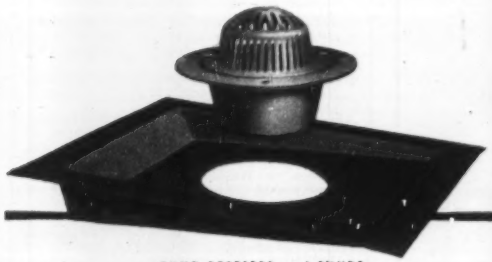


BUILT-UP SADDLES ELIMINATED

Built-up saddles are eliminated in Steel Deck Roofs. Purlins can be set to create valleys at sump locations in the drainage area. Steel Deck can be warped to conform. No additional deck plates are required—no cutting, fitting or bending necessary.

SAFEST, because it's STEEL . . . MOST PRACTICAL, because it's LIGHT WEIGHT!

New Steel Deck roof construction methods put Steel Deck away ahead of other types of deck material—why? . . . because it is STEEL. New roof building methods provide effective safeguard against pitch seepage under extreme fire conditions. Now, more than ever before, Steel Deck stands out as the most practical and most logical deck material available for modern, permanent, firesafe roof construction. The reason for this is simple . . . the over-all cost of a Steel Deck roof is less than any other type of roof. Steel Deck's light weight, and the fact that it can be insulated to the exact degree to meet local requirements, permits substantial savings in the supporting structure—total dead roof load will prove to be less than any other type in any given locality. Mahon Steel Deck is available in Galvanized or Enamel Coated Steel . . . stiffening ribs are vertical—no angular or horizontal surfaces where troublesome dust may accumulate. In the enamel coating process, the metal is chemically cleaned, phosphated, and treated with a chromic acid solution to provide paint bond, and the protective coating of synthetic enamel is baked on at 350° F. prior to roll-forming. Consider these extra-value Mahon features. See Sweet's Files for complete information, including details and Specifications, or write for Catalog B-55-B.



SUMP RECESSES and SUMPS

Mahon Roof Sump Recesses for use with Mahon Steel Deck can be furnished to fit any roof pitch. Mahon Cast Iron Sumps can also be furnished for 4", 5", and 6" conductors.

THE R. C. MAHON COMPANY

Detroit 34, Michigan • Chicago 4, Illinois • Representatives in all Principal Cities

Manufacturers of Steel Deck for Roofs, Partitions, and Permanent Concrete Floor Forms; Insulated Metal Walls of Aluminum, Stainless or Galvanized Steel; Insulated Metal Wall Panels; Rolling Steel Doors, Grilles, and Underwriters' Labeled Automatic Rolling Steel Fire Doors and Fire Shutters.

MAHON

Now! FASTER DIGGING

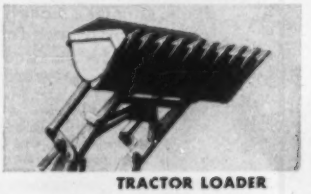
Money saving, quick-changing *ESCO* Box Points and Adapters will cut your operating costs and speed production on big jobs and small.

BACKHOE

DIPPER

DRAGLINE

CLAMSHELL



TRACTOR LOADER

YARDAGE GOES UP! COSTS GO DOWN!

ESCO® Box Points and Adapters on your hoe bucket, dragline, dipper, clamshell, tractor loader and ripper make possible faster digging, at less cost, with minimum downtime. Heat treated and differentially hardened for shock and abrasion resistance, *ESCO* Box Points stay sharper, last longer and cost less than solid teeth. And *ESCO* Adapters outlast many changes of points. Correct adapter pitch results in higher digging efficiency.

With *ESCO* Adapters on your equipment, installing or changing points is a simple matter. Only 2½ minutes to remove and only 2½ minutes to install a set of 4 sharp *ESCO* Box Points. Downtime is all but eliminated.

ESCO Box Points are available in 6 point shapes (five different sizes, widths 3" to 7"), each designed for specific digging conditions. Now you can select the right point for maximum digging efficiency on any job. Your *ESCO* dealer can furnish these points and adapters for all makes and types of buckets.

ESCO

Offices and Warehouses: Honolulu, Hawaii; Houston, Texas; New York-New York; Los Angeles, San Francisco, California; Seattle, Spokane, Washington; Centralia, Pennsylvania; Eugene, Medford, Oregon; Salt Lake City, Utah. In Canada: Vancouver, B. C., and Toronto, Ontario

ELECTRIC STEEL FOUNDRY CO.

2142 N. W. 25TH AVE., PORTLAND 10, OREGON

712 PORTER ST., DANVILLE, ILL.

READER COMMENT

Bidding by engineers

SIR: Your editorial opinion, as expressed in the issue of Sept. 16, p. 120, with respect to competitive bidding for professional engineering services is, in my considered judgment, unwarranted and untenable.

As an engineering consultant, with years' experience, registered in several states, I charge minimum retainership and per-diem fees based upon the published recommendations of professional societies in those states, and consequently feel that I should have no competition, on the basis of fee alone, from any similarly qualified engineer in my field of practice, which specifically embraces coastal erosion control studies and design of ocean beach protective structures.

ROBERT CRAIGHEAD WALKER,
Architectural Engineering Consultant,
Ocean Beach, Berlin, Md.

Precast walls vs. hurricane

SIR: As a sequel to the article which ENR carried about the Peconic River Plant of the Grumman Aircraft Engineering Corp. in Calverton, L. I. (July 29, p. 32) we thought you might be interested in the effect of Hurricane Carol (Aug. 31) on that group of buildings.

The operator of the control tower reported that the two anemometers in the control tower registered 117 knots or about 133 mph. The precast panels suffered no damage and evidenced no leakage. It is rare that immediately on completion a project of this size that the structures are subjected to the equivalent of a laboratory test.

ALBERT HOMER SWANKE
Project Manager

CALENDAR

American Institute of Steel Construction, annual convention, Greenbrier Hotel, White Sulphur Springs, W. Va., Oct. 25-28.

Rail Steel Bar Association, meeting, Edgewater Beach Hotel, Chicago, Oct. 25-26.

American Concrete Pipe Association, fourth annual short course school of instruction, Statler Hotel, St. Louis, Mo., Oct. 25-27.

Plastics in Building, conference being sponsored jointly by the Society of the Plastics Industry, Inc., the Manufacturing Chemists Association, and the Building Research Advisory Board, at the National Academy of Sciences, Washington, D. C., Oct. 27-28.

American Concrete Institute, regional meeting, Statler Hotel, Los Angeles, Oct. 28-29.

Engineers Council for Professional Development, annual meeting, Alms Hotel, Cincinnati, Oct. 28-29.

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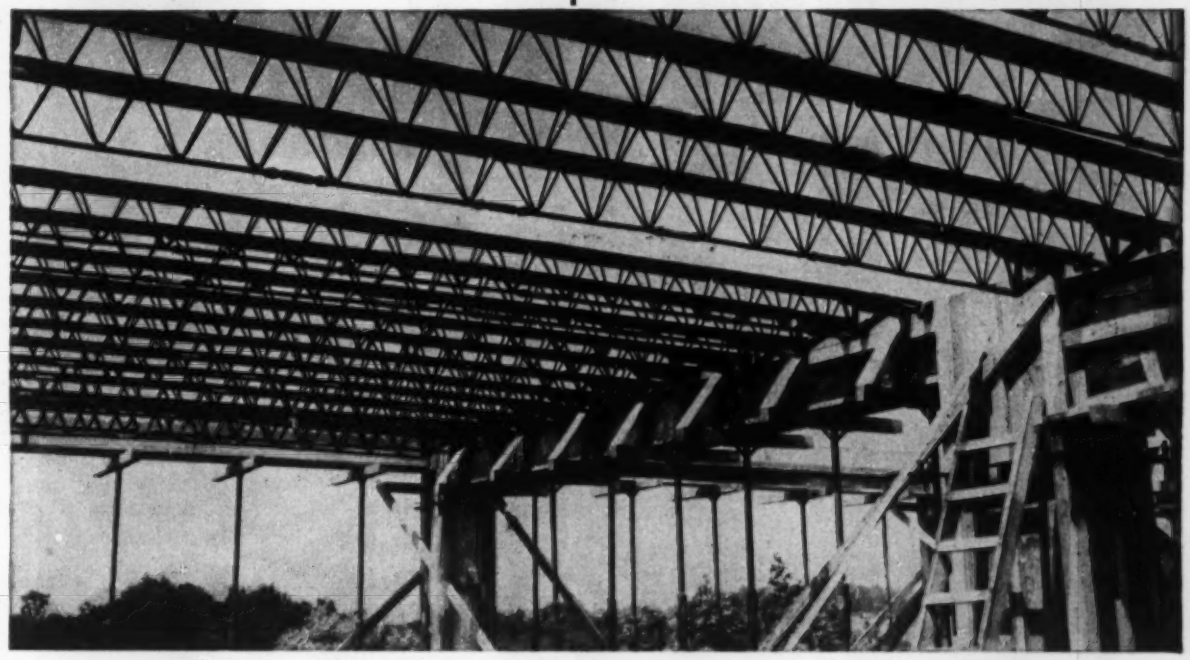

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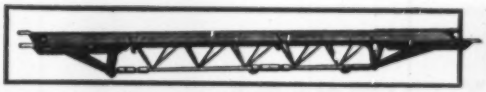

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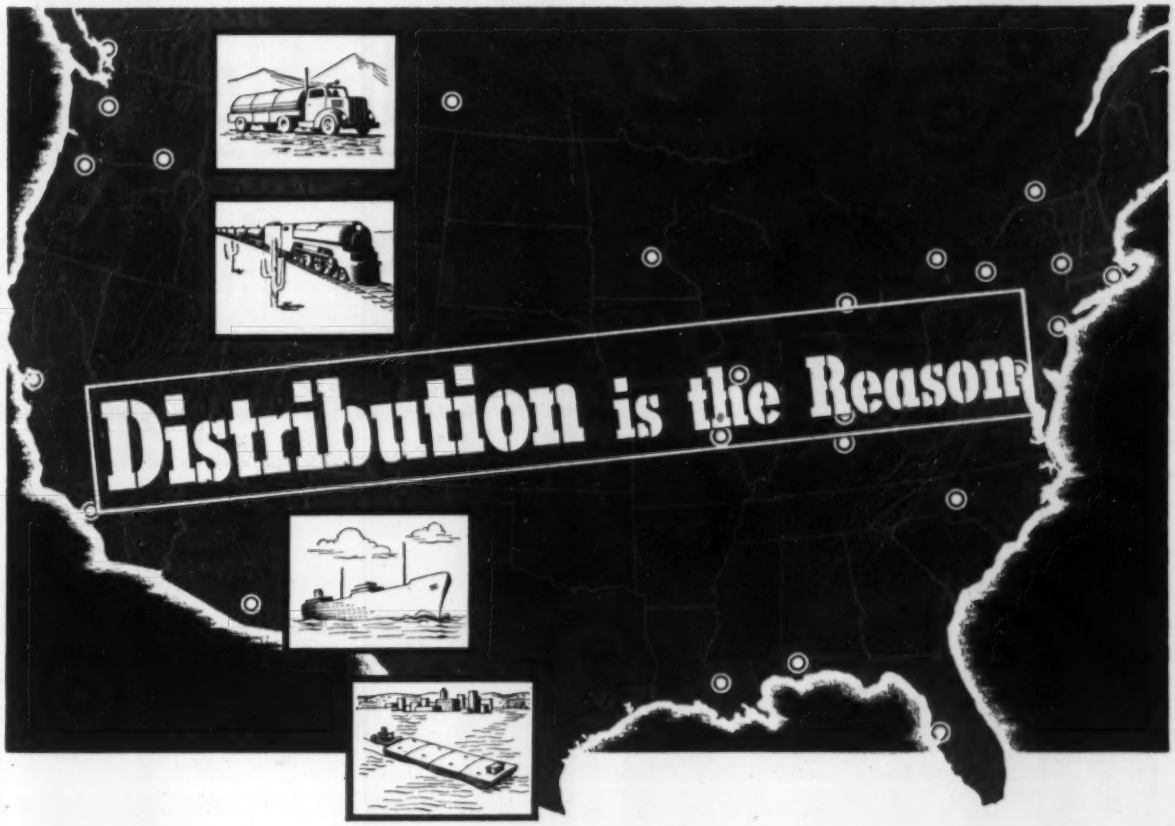

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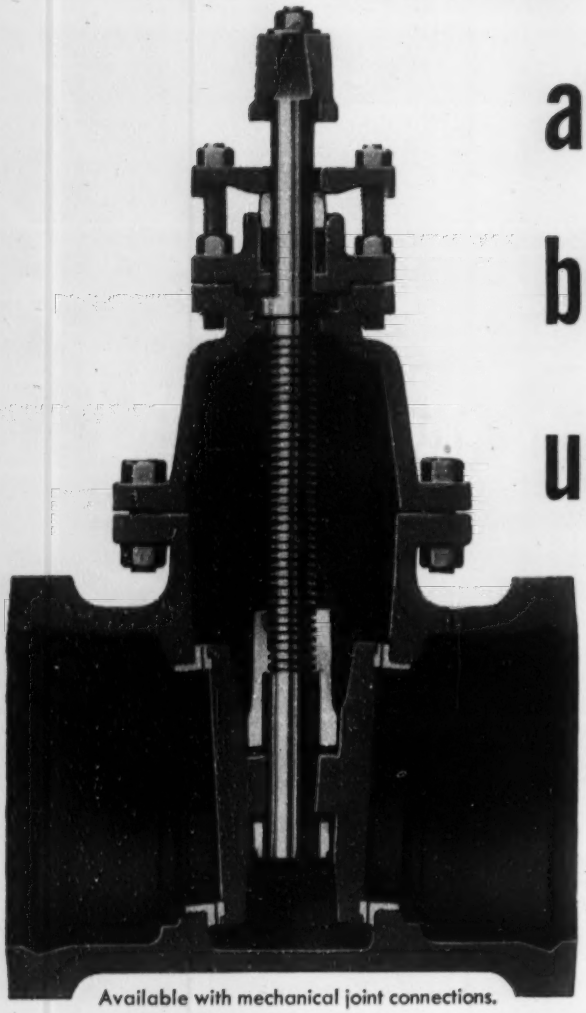

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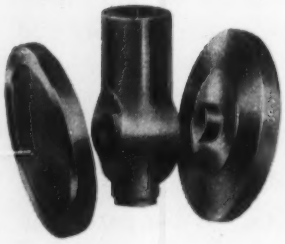

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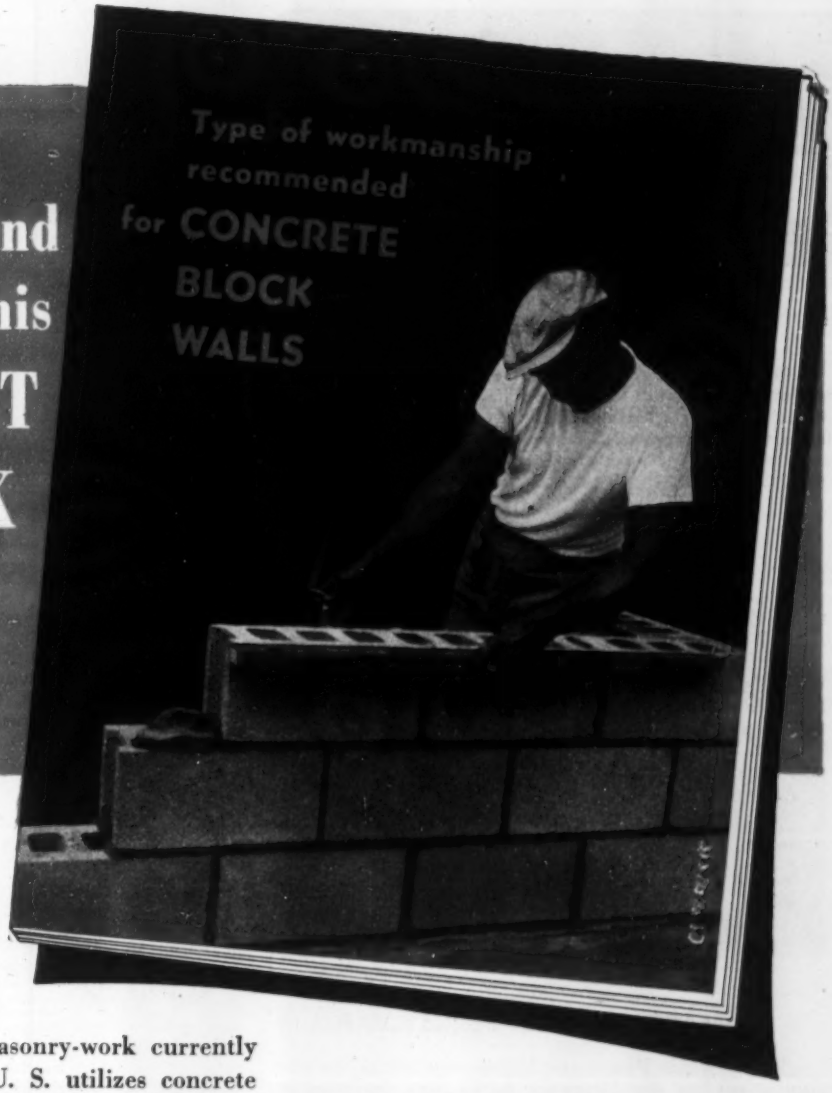

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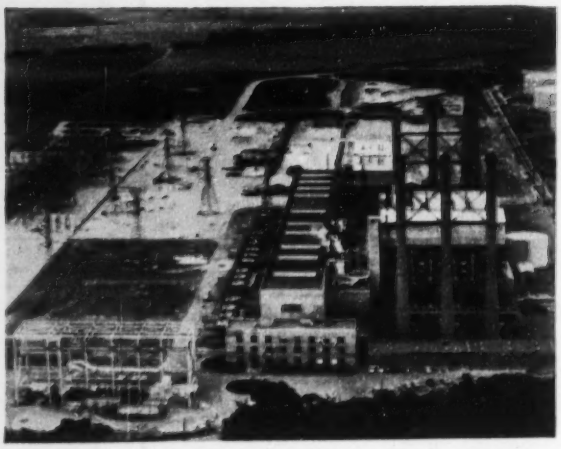
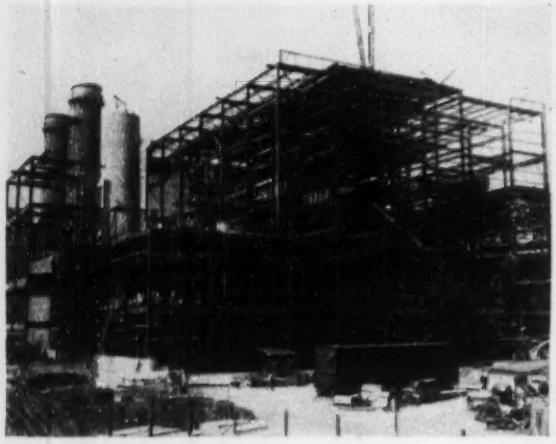
MOSS LANDING, CALIFORNIA ▶

One of the West Coast's biggest generating plants is Pacific Gas and Electric's 575-mw steam plant on Monterey Bay. Bethlehem Pacific Coast Steel Corporation fabricated and erected the steelwork, and fabricated the switching structures and transmission towers shown here.



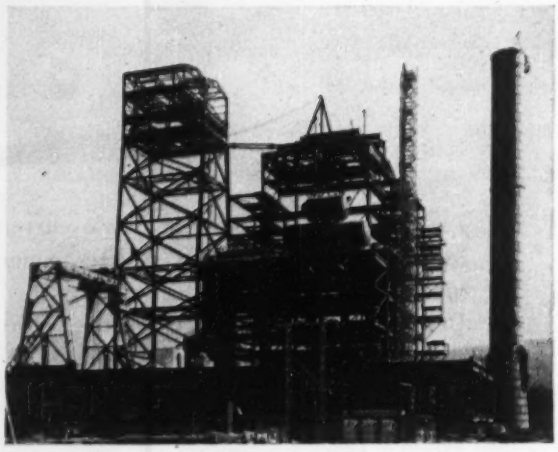


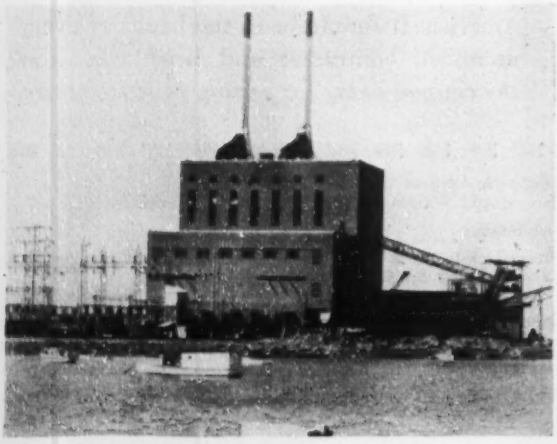
◀ ALEXANDRIA, VIRGINIA

Back in 1948, Bethlehem fabricated and erected 3800 tons of steelwork for Potomac Electric's 160-mw steam-electric plant. Greatly increased power requirements have since made it necessary to construct this 3500-ton addition, to house two new 100-mw units. Final capacity will total 360 mw.

MARTINS CREEK, PENNSYLVANIA ▶

Pennsylvania Power and Light's new 132.5-mw outdoor plant on the Delaware River was designed to operate only 3,000 to 4,000 hours per year, handling peak loads. Investment was minimized by such economies as eliminating housings for much of the equipment, leaving exposed a good deal of the 2300-ton steel framework. A second unit is under construction.





◀ DUNKIRK, NEW YORK

Niagara Mohawk's ultra-modern steam-electric generating station on Lake Erie. The steam turbine of each of the two 80-mw units is of a new design, first of its type ever made. Over 5000 tons of steel, fabricated and erected by Bethlehem Steel Company, went into the station's structural framework and boiler supports.

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ENGINEERING NEWS-RECORD

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THE CONSTRUCTION WEEK

STICK TO YOUR LAST—Courts shouldn't try to locate, build or maintain highways, said Alabama's Supreme Court in reversing a lower court decision that would have stopped construction of a new bypass near Montgomery.

A motel owner had obtained an injunction against the highway bureau, charging loss of business and that the new bypass is unnecessary.

Said the high court: Individual financial loss can't be controlling against general public good; it's not the court's business to decide where a highway should do most public good.

AFTERMATH OF ALFRED—San Franciscans turned out in great good humor when a farcical funeral was held for "Alfred the Monster"—world's heaviest pile-driver—early this year (ENR May 6, p. 36). The machine had just finished work on foundations for a 26-story building.

Not everybody was in good humor, it appears. Last week, owners of a three-story building half a block from the site claimed damages to their building from earth shocks, filed suit for $100,000 damages against the building's owners and contractors.

TAXES ON TOLLS—Privately operated toll roads are subject to state, county, city, school district taxes, just as any other private enterprise, ruled the Texas Supreme Court.

Specific reference was to plans by private corporations to build toll roads from north Texas to the Gulf of Mexico. The court held such property isn't publicly owned, and that there is some doubt the road ever would become state property.

The Texas Turnpike Authority—a state-backed body—wasn't involved in the decision.

POWER PROSPECT—Washington Water Power Co.—armed with preliminary site investigation reports—hopes to start building its $85-million Noxon Rapids Dam on the Clark Fork River (in Montana) by the middle of next year and produce power by late 1959.

Application for an FPC license for the 350,000 kw project will go in January.

EVERYBODY'S DOING IT—Add to studies of the President's $50-billion highway proposal:

American Road Builders Assn., which has started a survey of readiness and capacity of the highway industry. American Association of State Highway Officials already has started a check of materials availability; Associated General Contractors is cooperating in both checks.

UP KITIMAT—Capacity of Aluminum, Ltd's Kitimat smelter will be expanded immediately to produce an extra 60,000 tons of ingot a year, to meet expanding demand.

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WASHINGTON OBSERVER

Administration planners are ready to show how you pay for new highway building. They've taken the basic indexes on the national economy—gross national product and the like—plus special studies showing how auto traffic and other revenue-producing activity rises with the construction of new highway mileage.

Here is one argument they will use to sell Congress the highway program:

Normal traffic growth will produce an additional $300 million per year in highway-user revenues at present tax rates. This is from gas taxes, license plates, and ton-mile and similar taxes. On top of this estimate, there'll be increased revenues from such things as the auto and tire excises, local sales taxes on autos, and other taxes the government experts aren't counting in their calculations.

•

Eisenhower's experts say $300 million per year will buy the $50-billion program. Here's how they work it out:

Suppose you float 30-year bonds at 3%—this is an extremely high interest rate, the insiders say; they expect to pay less on a government-guaranteed bond.

$300 million per year would pay both interest and amortization on a $5 billion issue, the amount which the highway agency would have to sell each year to carry out the program as it's being presented.

Also, $300 million per year would cover the cost of maintenance of the new construction built with the bond money.

This is conservative estimate, officials say. Actually, they expect things to be considerably brighter than this, especially since interest charges are sure to be well below 3%. For example housing authority bonds, guaranteed by the federal government, sell easily to investors at 2.3% interest.

•

This kind of arithmetic doesn't solve all the financial problems, of course. About three-fourths of the $300-million additional revenue the federal men talk about is collected by the states, not the federal government. Hence you have the problem of getting the states to tie this additional income to the new highway program.

But federal experts say this isn't an insuperable obstacle. State highway corporations could be created on the pattern of the federal agency. State agency bonds would either be bought by the federal agency, or would get a federal guarantee, based on the state's agreement to commit its increased revenues to the bonds. That is just one example. Whatever methods are used, once a couple of big states take the steps to get highway building going, officials count on pressures on other states to force them into the program.

The Administration wants the state governors behind its program by the time Congress gets ready to consider Administration proposals. The special governors committee is meeting in Chicago Nov. 9. The governors have been filled in almost completely on Washington thinking.

•

The lease-purchase idea is being boosted for school construction. The idea of buying federal buildings on the installment plan is being studied to see whether it can't be adapted to federal aid to schools. Classroom needs are well recognized, and a special White House conference on schools is going to tackle the problem next year. By that time, the success of the highway financing idea will be known. All estimates on school construction needs run into the billions.

•

The impact of easier housing credit is showing sharply in starts. Last month's figure of nearly 112,000 private starts was the largest for September since the 1950 all-time record of 116,110. On an annual basis, this is equal to 1,232,000 private housing starts. Private starts in 1950 reached a total of 1,352,200.

Such figures boost Administration hopes that housing next year will be up to the 1950 record.

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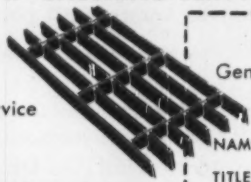

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Where $50 billion for roads will go

Bureau of Public Roads breaks down expenditures for highway construction

President Eisenhower's $50-billion, 10-year program for additional highway construction—slated to go to Congress in January—will increase the nation's capital outlay for road building by $5 billion a year.

The best estimate that can be made today on how these additional dollars will be distributed appears in the accompanying breakdown. Roughly $1 billion of each year's outlay may be expected to go into right-of-way and engineering costs. The remaining $4 billion will be paid out to the contractors who build the roads.

Allowance for right-of-way and engineering is made larger than usual to cover increased expenditures for urban property and for wider employment of consulting firms on design and construction supervision.

• **Materials get big share**—Annual spending for materials and supplies is figured on the basis of Bureau of Public Roads records for all federal-aid projects completed during the two years, 1951 and 1952.

These records show that highway contractor dollars in recent years have been expended to a steady level averaging about 37% for materials and supplies and about 27% for on-site construction labor (wages and salaries), with the remainder going mainly for equipment expense, plus miscellaneous costs, overhead and profit.

Wages and salaries paid to on-site labor have followed a steady, slightly declining trend percentagewise during the last eight years, according to BPR records of all federal-aid projects completed 1946-1953. The highest percentage was registered in 1946 (31.3%); the lowest, in 1953 (26.4%).

Mechanization and increased productivity get most of the credit for lower on-site labor costs. Further improvement of construction machines, spurred on by a more-than-double volume of road building, may accelerate the decline in the labor cost component, reduce it to 25% or less.

• **And equipment too**—How much equipment will be needed to build an added $5 billion a year of highways—of which $4 billion will be paid out for actual contract construction, at a conservative estimate, the work would require an additional $2 billion of construction equipment, new value.

In 1949, BPR made a July-August survey—with the help of state highway departments—on nearly $460 million of going jobs. Equipment used by contractors on these projects had a value purchased new in 1949 equal to 67% of the contract total.

A substantial portion of this equipment—nobody knows how much—worked on more than one project during the year, moving from one job to another. People who figure overall construction percentages think that equipment valued new at 50% of annual highway contract costs would be sufficient to build the roads.

Of course, not all this additional equipment would be purchased new. Some part of the need would be covered by intensified use of present equipment and by switching to highways equipment used elsewhere.

$50 billion is split like this

(In millions of dollars)	
Right-of-way-engineering	**$1,000**
Materials and supplies	
Sand, gravel, crushed rock	$280
Cement	180
Asphalt, tar, road oils	140
Ready-mix concrete	95
Bituminous paving material	90
Concrete culvert pipe	65
Metal culvert pipe	45
Structural steel	210
Reinforcing steel	110
Lumber	50
Timber piling	10
Explosives	20
Clay pipe	5
Petroleum products	140
Other materials	80
Total, materials and supplies	**$1,520**
Contractors' on-site labor	**$1,080**
Contractors' equipment expense, miscellaneous, and overhead, including profit	**$1,400**
Total	**$5,000**

Demand will spur atomic power plans

New construction market nears as pressure grows for pilot plant projects

The world's ever-growing demand for power will bring nuclear energy into general civilian use quickly, despite heavy obstacles. And with it, will come an ever-increasing new market for the services of the construction industry.

A panel of nuclear specialists, addressing the Third Annual Conference on Atomic Energy in Industry in New York City were sure that commercial nuclear power plants will be developed—and quickly—to bridge the gap between what conventional power stations can now produce and world demand.

And even as they spoke, construction firms were ready to start work on four big projects aimed at bridging the gap between present nuclear production costs and knowledge, and commercially feasible production:

A $33.3-million expansion of facilities at Weldon Springs Ordnance Works west of St. Louis; a $6.5-million feed materials plant expansion at St. Louis; $20.1 million at Fernald, Ohio, production center; and $7 million more at AEC's monster Paducah, Ky., plant.

• **Need is there**—The scientists tried to keep on the conservative side in discussing the world's power needs, but their figures were startling enough, anyhow.

Most conservative, probably, was Robert E. Wilson, chairman of the board of Standard Oil Co. (Indiana). He estimated world power requirements would increase tenfold in the next century. Most of the others agreed on a much more rapid jump in demand—a doubling every 10 years.

• **Shady side**—Addressing the conference, under sponsorship of the National Industrial Conference Board, the nuclear experts pointed to many serious obstacles that stand in the way of commercially feasible nuclear power:

. . . Atomic power

1. Until very recently, funds for nuclear research have been spent exclusively for research, production of nuclear weapons, or for plants to produce fissionable materials. (The nation's first central station atomic power plant is now under construction at Shippingport, Pa., at a cost of $45 million.)

2. There isn't an operating nuclear power plant in existence that can produce power at a cost low enough to use as a commercial prototype.

3. Areas of uncertainty—in both engineering performance and costs—are so large that no amount of paper analysis can guarantee a proper choice. You can't even compare the plants among themselves for costs.

• **Bright side**—But there's room for optimism, too.

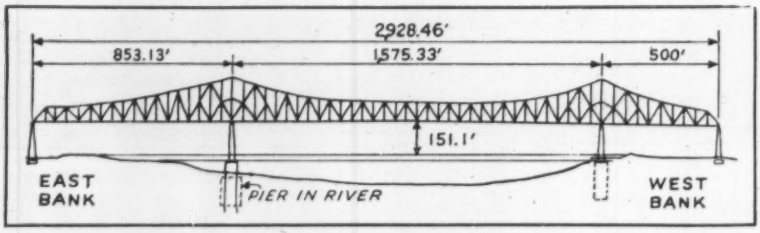
Said the panel: A conservative estimate of the probable cost of power from nuclear plants could place them in the same "ball park," at least, with conventional plants—and, with a little optimism—it isn't unreasonable to guess that in the future ways may be found to make them competitive.

Added to this is the belief that military research into nuclear energy will produce by-products of knowledge that will contribute to development of power for civilian use. That prediction came from Col. James B. Lampert, chief, Army Reactors Branch, who added that the AEC and Defense Department have put up the money already for a "package" power reactor, expected to produce 1,700 kw, and now under planning at Ft. Belvoir. Such a plant, said Col. Lampert, would be exactly suitable for isolated areas, mining camps, underdeveloped countries. More than 100 firms have expressed an interest in designing and building it.

• **And so to work**—AEC has already chosen three architect-engineer firms for the four facilities in the Midwest. They are: Blaw-Knox Construction Co., Pittsburgh, for the Weldon Springs and St. Louis work; Singmaster & Brewer for the design at Fernald; and Giffels & Vallet, of Detroit, for designing the Paducah expansion.

Full-scale construction may begin early next month.

All four programs are ostensibly to "balance the program and open bottlenecks" in the careful language of AEC's announcement—but all are in fact steps toward economic production of materials, and further explorations into knowledge of nuclear energy itself.



Mississippi River bridge to set record

$57-million toll facility at New Orleans will have 1,575-ft cantilever span—longest in U. S. and ranking third in world

Work on the $57-million Mississippi River toll bridge at New Orleans —which will boast the longest (1,575 ft) cantilever span in the country—is scheduled to get under way at the turn of the year.

With a $65-million revenue bond issue sold (ENR Oct. 14, p. 60), Louisiana's Mississippi River Bridge Authority plans to advertise for foundation bids next month.

Tied in with the bridge project, which has been held up for several months by a controversy over both vertical and horizontal clearances (ENR Feb. 11, p. 26), is a proposed expressway construction program costing another $50 million.

Expressway projects are scheduled for both sides of the river and, together with the new bridge, are destined to have significant impact on New Orleans' residential and industrial development as well as on the city's traffic patterns.

• **A milestone in bridging**—Only two other cantilever spans in the world will exceed that of the New Orleans bridge. One is the St. Lawrence River bridge at Quebec with a 1,800-ft span and the other is Scotland's famous Forth Bridge with a span of 1,700 ft. Both are railroad bridges. India's Howrah Bridge now ranks third, with a span of 1,500 ft. The Transbay bridge at San Francisco with a main span of 1,400 ft now is the largest cantilever bridge in the U. S.

Overall length of the New Orleans bridge will be 2,928 ft. The 1,575-ft main span will be supported by one pier in the river—located 550 ft out from the east bank in 70-ft-deep water —and a pier situated on the west bank levee. Work on these piers is expected to be carried on simultaneously.

On the east side, the anchor pier will be on the land side of Thalia St. wharf and will be connected with the river pier by an 853-ft span. The anchor pier on the west side will be connected with the levee pier by a 500-ft span.

Engineers have recommended that the center span be completed by hoisting a 500-ft section into position, either by use of floating cranes or by cables from the extended sections of the span already in place.

According to Capt. Neville Levy, chairman of the Mississippi River Bridge Authority, it is planned to advertise for bids for construction of the two main piers and the two anchor piers next month. Bids also will be called for the laying of mattresses to protect the river bed during pier construction.

Plans for the superstructure are expected to be ready in January 1956, and, allowing six to eight months to fabricate the steel, superstructure work could start in the fall. The authority is aiming for a January 1958, completion date.

Modjeski and Masters, Harrisburg, Pa., are the engineering consultants.

• **Expressway program**—Some elements of the city's comprehensive expressway program are already under construction. Two basic projects are involved: (1) Pontchartrain Expressway, which will run from the eastern terminus of the bridge to a point near Lake Pontchartrain, and (2) the West Bank Expressway, which will run from the western terminus through the West Bank industrial section to the existing Mississippi River bridge.

The bridge is expected to facilitate industrial expansion on the city's west bank, where sites are cheaper and more numerous. It also will open the Algiers section of the city on the west bank, where large tracts of undeveloped land are awaiting residential construction. Algiers and environs could accommodate a 200,000 population, which would redress an imbalance resulting from the city's expansion westward into Jefferson Parish. Development of the west bank thus will aid the city's main business district, which fronts the river and has become too remote from postwar residential developments.

Hurricane toll

U. S. suffers damage in 10-state area; Toronto gets disastrous flood

Both U.S. and Canada this week faced a multi-million-dollar reconstruction job as a result of Hurricane Hazel's wind and flood damage along a 200-mile-wide sweep from the coast of the Carolinas northward to Hudson Bay.

Hazel carved a path of destruction, involving loss of 82 lives, through 10 states and the District of Columbia before crossing the border to cause a severe flood in Toronto. Hardest hit in the U.S. were the Carolinas, which were immediately declared a major disaster area by the President and granted federal aid. Maryland, which like the Carolinas suffered particularly heavy coastal damage, also looked as though it might qualify for such assistance.

• **The Toronto flood**—A seven-inch rainfall in the western part of the Toronto area swelled all local water courses, especially the Humber River and the Etobicoke Creek, which had water levels up to 20 ft above normal. Flood waters of the Humber washed out Raymore Drive, 31 of whose residents drowned to account for large part of the casualty list of 50 dead and 36 unaccounted for.

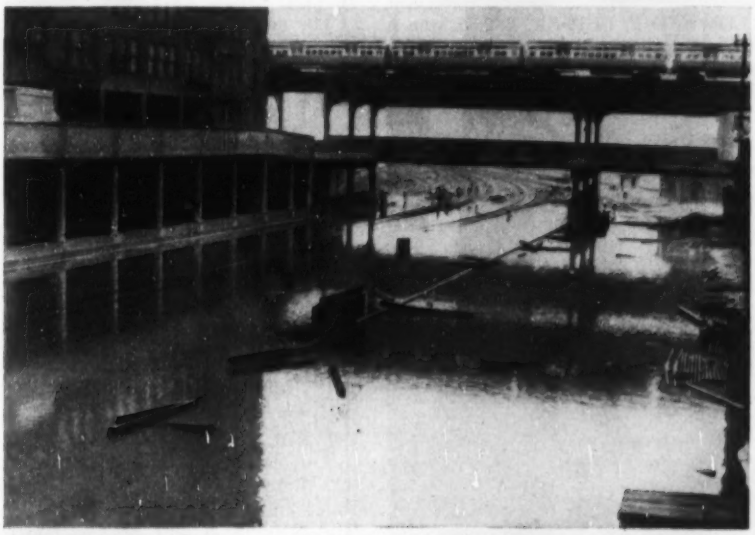
Forty bridges were washed out, cutting off all communications to the north and west of the city. The Department of Highways had received a request for 27 Bailey bridges by Monday afternoon. Many local water purification plants were put out of action, and residents in affected communities have been ordered to boil their drinking water.

• **Ohio river kicks up**—Heavy rains, induced partly by Hurricane Hazel, caused the Ohio River to overflow its banks last weekend. Most affected were Pittsburgh, Pa., and Wheeling, W. Va. However, relatively small areas were under water in both places and, in most cases, residents who had to evacuate their homes were back next day. At Wheeling, the river crested at 44.7 ft—highest since March, 1945, when it reached 47.3 ft. Flood stage is 36 ft.

Heaviest rains in 69 years gave Chicago and environs a serious flood problem a week before Hurricane Hazel made its appearance. The Chicago River rose five feet above normal as a result of 6.24 in. of rainfall in 42 hours. Damage was estimated at upwards of $10 million.

Although power and transportation services were interrupted, greater loss in the downtown area was averted when sanitary district engineers opened the locks at the mouth of the river to reverse its flow and to drain flood waters into Lake Michigan. Locks were kept open for five hours to allow the river to reach normal level. To guard against the danger of contamination, large quantities of chlorine were added to drinking water from the lake.

The little Calumet River and Wolf Lake cascaded four feet of water into Hammond, Whiting, Munster and other northern Indiana communities.



CHICAGO'S TROUBLES preceded Hurricane Hazel by a week when the heaviest rainfall in 69 years swelled the Chicago River to five feet above normal. The flooded railroad yards at Union Station caused but one of many interruptions of public service. Two power plants were out; bridge traffic was blocked. However, more serious damage to downtown Chicago was avoided by opening the locks at the mouth of the river to reverse its flow into Lake Michigan.

$87-million sewage plan OK'd for construction

Pittsburgh's Mayor David L. Lawrence gave the go-ahead sign last week for construction of a vast sewage disposal project which will cost between $87 million and $100 million.

Construction of the big project is in line with an eight-state master plan to clean up the Ohio River and has been backed by the Ohio River Valley Water Sanitation Commission.

The proposed sewage project will serve Pittsburgh and 63 neighboring communities on the Ohio, Monongahela, Allegheny and smaller rivers (ENR April 1, p. 26) The Pennsylvania Sanitary Water Board approved final plans for the project last month and has ordered the job completed by June, 1958.

Lawrence said he would replace the Allegheny County Sanitary Authority, which carried through preliminary planning for the project, with a new five-man authority—three chosen by the city and two by Allegheny County—to serve without pay as the top direction for the construction work.

He said this would give the city of Pittsburgh tighter control over the project. Pittsburgh, he pointed out, will have to foot a high percentage of the total cost and already has contributed about $2 million for planning.

Low bidder wins contract to build four sewage works

A contract for four sewage works at restaurants along the New York State Thruway has been awarded to the low bidder—Villard Contracting Inc., of Hastings-on-Hudson, N. Y. The price: $462,090.

Bidding on these four of an ultimate two dozen such plants along the toll road was of considerable interest to manufacturers of sewage works equipment and to sanitary engineers in general because of the way specifications were written. Contractors were asked in effect to submit designs on single-stage, high-rate trickling filter plants (ENR Aug. 26, p. 26).

The successful bidder has made known since the bid opening that he will install mechanical equipment furnished by Infilco, Inc. A representative of the contractor told ENR that the bid was a little harder to prepare than others and that the Thruway Authority is "paying for engineering services—it's in the bid."

Cornelius J. White, state architect, reports his office is "well satisfied . . . contract cost has been below the estimate. . . . Efficacy of the flow sheets submitted and approved is well documented by actual installations and by research."

ASCE awards

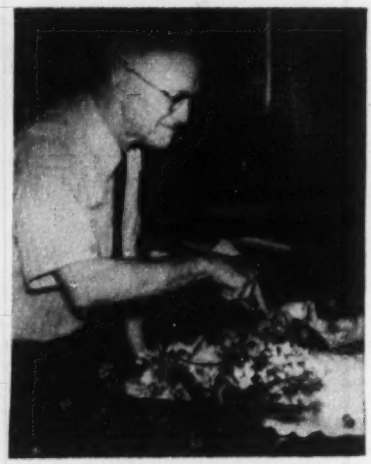
Two bridge builders and a structural consultant made honorary members

Honorary memberships were conferred on three structural engineers by the American Society of Civil Engineers at its annual meeting in New York this week. The recipients are:

Shortridge Hardesty, both as a practicing engineer and leader in research activity, has made outstanding contributions to the knowledge of both fixed and movable bridge design and construction techniques. The New York area alone offers a variety of examples of his work, including the Port of New York Authority's Goethals and Outerbridge cantilever bridges across the Arthur Kill, eleven vertical lift railroad bridges and five bascule bridges in the metropolitan area. Hardesty has taken an active interest in a wide range of research work sponsored by the American Railway Engineering Association and is chairman of the Column Research Council of the Engineering Foundation. He has practiced in New York since 1920, and from 1927 to 1938 was in partnership with the late J. A. L. Waddell. The firm name of Waddell & Hardesty continued until 1945, when Hardesty & Hanover was formed.

Edward P. Lupfer has been responsible for design and construction of a number of outstanding public works projects in his home city of Buffalo and in other parts of upper New York State. The firm which bears his name designed and supervised construction of the Peace River Bridge across the Niagara River at Buffalo and was teamed with Waddell & Hardesty on the Rainbow Arch Bridge at Niagara Falls. Lupfer served as acting president of the ASCE from May 1937 until January 1938.

Robert J. Cummins has played a significant role in the phenomenal development of Houston, Texas. He has done the structural design for a wide range of projects, including University of Houston buildings, industrial plants, marine installations on the Houston Ship Channel, a Veterans Administration hospital and the San Jacinto Monument near Houston. He also has been connected with port development in Corpus Christi and Brownsville. Cummins also has filled several national posts. He was an engineer-advisor to the Reconstruction Finance Corporation on the Metropolitan Water District of Southern California and on the San Francisco-Oakland Bay Bridge, and an advisor to the (U. S.-Mexican) International Boundary Commission.



SHORTRIDGE HARDESTY, New York, who cut his 70th birthday cake on a drafting table last month, as bridge designing briefly halted.

EDWARD P. LUPFER, Buffalo, who is now designing New York Thruway routes in his city as he once did the sewer system.

ROBERT J. CUMMINS, Houston, who is seldom far from a material hoist, as the buildings he designs continue to transform his city's skyline.

Maryland toll road

State Roads Commission recommends construction of $29.5-million project

The Maryland State Roads Commission has recommended construction of the state's first toll road—a 48-mi limited access expressway from Baltimore to the Pennsylvania line.

The $29.5-million project still must be approved by the Maryland Legislature. Maryland law gives the State Roads Commission authority to build toll roads only if the facilities can be financed entirely from tolls.

The State Roads Commission, however, is said to believe that a straight toll financing plan would be unfair to Maryland motorists who would use the proposed northeastern expressway on a regular basis. The commission, therefore, wants to charge Maryland users a lower rate than out-of-state drivers and make up the resulting loss of revenue from state gasoline and motor vehicle taxes.

Under the state's 12-year highway modernization program, the proposed toll highway is scheduled for completion in 1965. By taking the project out of the long-range program and building it as a toll road, the commission figures it could be completed within three or four years.

The commission pointed out construction of other projects in the state's 12-year, $568-million roadbuilding program could be speeded by similar partial-toll financing. Each individual project would need specific approval by the legislature.

The northeastern expressway, under present plans, would come within 35 mi of the Pennsylvania Turnpike and within 25 mi of the Delaware River Bridge and the New Jersey Turnpike. Maryland roads commission officials said both Delaware and Pennsylvania had agreed to build suitable connections with the proposed toll road.

Wisconsin court upholds urban redevelopment law

The Wisconsin Supreme Court has upheld the constitutionality of the state's urban redevelopment law. The decision will permit Milwaukee to start two slum clearance projects.

The Wisconsin law is similar to legislation enacted by more than 30 states and the District of Columbia. The Supreme Court of the United States will hear arguments on the constitutionality of the District of Columbia law during this current session, and the fate of all urban redevelopment legislation will be at stake in its decision (ENR Sept. 30, p. 22).

RETIRING, after eight years on the job, is William N. Carey.

NEW ASCE executive secretary will be W. H. (Pete) Wisely.

Wisely to be new ASCE secretary

News of his selection revealed at Cincinnati meeting of Federation of Sewage & Industrial Wastes Assns.

While members of the American Society of Civil Engineers awaited this week's New York convention for news of who might replace retiring ASCE executive-secretary William N. Carey, his heir apparent was revealed last week in Cincinnati.

W. H. (Pete) Wisely tendered his resignation effective next Jan. 15 after 14 years as executive-secretary of the Federation of Sewage & Industrial Wastes Assns. The word spread quickly through 1,100 convention registrants that Wisely was to leave their 6,200-member organization to head the 38,000-member ASCE.

Wisely spent most of the week reluctantly accepting congratulations and explaining that while he was to be recommended for the ASCE job by a committee assigned to fill it, he would be sure of nothing until after acceptance of the committee recommendation by ASCE's board of direction.

But his sewage works organization refused to let its popular secretary simply fade away. At the convention's dinner last Wednesday night, the outdoing president, Louis Fontenelli, broke the news publicly and the federation's patriarch, William J. Orchard, presented an inscribed sterling silver tray to Mr. and Mrs. Wisely.

It is expected that 67-year-old Col. Carey will remain with ASCE for a short period after Wisely's arrival. Then, he will retire from the post he has held since 1946. Prior to joining the society's staff, Col. Carey had been in the Office of the Chief of Engineers with responsibility for design and construction of $500 million worth of community facilities in areas congested by the World War II emergency. Earlier, he had been city engineer of St. Paul, state engineer for Minnesota, director of the Minnesota PWA, and a consulting engineer in private practice in the municipal and sanitary engineering field.

A third principal in this shift of executive-secretaries is Ralph E. Fuhrman, named to replace Wisely. Fuhrman now superintends sewage disposal for Washington, D. C. He is a past president of the federation and on ASCE's Sanitary Engineering Division executive committee.

Best information this week has federation headquarters (a staff of six) moving to the Washington area from Champaign, Ill.

Sloan gets Hoover Medal

The American Institute of Consulting Engineers awarded the 1954 Hoover Medal for distinguished public service to Alfred P. Sloan, Jr., chairman of the Board of General Motors.

The award was made at the institute's annual dinner in New York Oct. 19. Former President Herbert Hoover, for whom the medal was named, and Sloan were the principal speakers.

Pipelines in Spain

Subcontracts for big job will go to joint ventures of Spanish, U. S. builders

Joint venture organizations composed of at least one Spanish contractor and at least one American pipeline builder will get the subcontracts to build 600 mi of pipelines to serve American bases in Spain.

Brown-Raymond-Walsh, prime contractor for the Spanish base program, announced that it would subcontract the pipeline work in one or several contracts to such combines.

This method, Brown-Raymond-Walsh said, would take full advantage of the American contractor's ability to furnish specialized equipment and trained technical personnel and the Spanish contractor's knowledge of local labor and construction conditions.

The pipeline will run from Cadiz Bay to Seville, Madrid and Zaragoza. The preliminary cost estimate is $30 million. Included in the job will be:

- Approximately 600 mi of 10-in. dia welded seamless steel pipeline.
- Pumping stations with all appurtenances, specialties, equipment, control and communication facilities necessary to produce a multiple petroleum product pipeline system.
- Storage tank farm terminals along the pipeline complete with storage tanks, distributing facilities, security and communication facilities and all other installations necessary for complete storage terminals.

Equipment furnished by the American contractor will be allowed to enter Spain duty-free if the contractor guarantees it will be removed from Spain when the job is completed. The American contractor will be expected to supply experienced management, technicians, certified pipeline welders and equipment operators.

Payment will be in both dollars and pesetas. Dollar payments will be limited to the cost of transportation, depreciation of equipment, and the expense of organization, overhead, profit, wages and salaries, etc.

Formal invitation for bids is expected in November or December. Brown-Raymond-Walsh said bids will be received early in 1955 from established Spanish contractors who will be required to associate themselves with an American organization with a record of successful experience in pipeline construction. Bidders will be required to furnish a substantial performance bond.

Requests for information about the job should be addressed to Brown-Raymond-Walsh, Edificio Espana, Madrid, Spain.

High-rate sludge digestion debated

New York engineer's report on pilot plant tests gives FSIWA's 27th annual convention lively discussion topic

Cincinnati, Ohio, "storm center of pollution abatement," welcomed the 27th annual meeting of the Federation of Sewage & Industrial Wastes Assn's., last week.

The big excitement of the convention was the resignation of the federation's executive-secretary (see p. 25). But at least one technical session provided excitement of its own.

Liveliest technical subject of concern to the convention—to sewage works designers, manufacturers, and superintendents—was design criteria for sludge digesters, a point currently at issue and a point with great bearing on sewage works costs.

Wilbur Torpey, of New York City's Department of Public Works led off by describing pilot tests made at Bowery Bay Plant. (Last year Torpey described full-scale process modification at Bowery Bay, where concentration of sludge has made possible its digestion in one digester instead of four (ENR Oct. 22, 1953, p. 23).

Torpey recently has tested a small pilot digester just as one would test a steel beam. He loaded it to failure to find how low a detention time could be reached before digestion in the tank would "rupture." His answer: 2.6 days. (Digestion for 30 to 60 days is common in established plants.)

Instead of providing digester space of 4 to 6 cu ft per capita, Torpey's pilot plant indicates ½ cu-ft per capita is ample.

The pilot plant at Bowery Bay was run for 200 days along side a plant digester currently digesting thickened sludge in 13 days detention time. Comparisons of results proved the pilot plant three times as efficient; Torpey reasons that even at its high (13-day) rate the big digester is only one-third efficient. He says five days detention, or 0.2 cu ft per capita, would suffice; but he recommends two 5-day tanks in series, or 0.4 cu ft per capita.

OHIO RIVER clean-up program is reported on by Hudson Biery, who welcomed FSIWA delegates to Cincinnati.

• **Questions and a warning**—Harry E. Schlenz, president of Pacific Flush Tank Co., Chicago, took exception to some of Torpey's conclusions and issued a practical warning against drastic cutting of digestion tank size. He stressed the need for storage space in digesters, where communities have no means of continuous disposal; he mentioned providing space for increases in population; and he warned that not everywhere is sewage works management capable of the control necessary for successful high-rate operation.

Rutgers H. Heukelekian rallied to Torpey's side with assurance that high-rate digestion is feasible. "Undoubtedly there are problems, but either we must stand back of what is conventional or move ahead. . . . I wish I were the one who could stand up and say I had made this suggestion," said Heukelekian.

Torpey sparked the spirited discussion that followed with the dramatic announcement that a phone call to New York had just confirmed that the city's 310-mgd Newtown Creek plant, now under design, will be designed for ½ cu-ft of digester per capita.

Schlenz stuck to his guns: "I don't think we're ready to design plants at these loads."

Heukelekian concluded this is something for large plants, not small ones; we are not ready to design on this capacity basis, "but this is something to dominate our thinking for the next ten years."

• **A question of cost**—Sludge disposal, as one of the thorniest problems in sewage disposal, was discussed further by speakers on use of centrifuges as thickeners. R. E. Bragstad, city engineer of Sioux Falls, S. D., described an installation used to thicken waste activated sludge to over 50% solids. Effluent from centrifuges was thick enough to settle more completely in clarifiers. Result was 50% less sludge eventually to lagoon and reduced sludge pumping, six hours instead of 20 hours per day.

L. S. Kraus, of the Peoria, Ill., Sanitary District, agreed that the centrifuge works effectively. It was found not to work economically in his case.

• **A question of time**—In welcoming FSIWA to Cincinnati, Hudson Biery, Ohio Commissioner on the Ohio River Valley Water Sanitation Commission and one who helped father the eight-state commission, had this to report on progress in pollution abatement:

By 1958 the Ohio will be relatively clean; by 1962 the vast "billion-dollar" river clean-up job will be nearly complete.

The eight-state commission's chief engineer and executive director, E. J. Cleary, was a pinch-hit luncheon speaker who reported impressions of European progress in pollution control gained from a European sanitary engineering seminar in Yugoslavia last summer.

The federation's Charles Alvin Emerson Medal went to C. C. Ruchhoft, recently retired as chief of physics and chemistry in the research laboratories of Robert A. Taft Sanitary Engineering Center in Cincinnati. (The Public Health Service's bright new research center was open to inspection by convention delegates.) Ruchhoft was honored for his work on stream pollution control.

The Harrison Prescott Eddy Medal went to H. B. Gotaas, W. J. Oswald, H. F. Ludwig and Victoria Lynch for their research on the role of algae in treating sewage.

David B. Lee (Sept. 30, p. 42) assumed presidency of FSIWA.

Water users taking over 1910 reclamation project

California's first reclamation project developed under the federal reclamation law has been turned over to the water users for operation and maintenance.

The Orland project in northern California was authorized for construction by the Secretary of the Interior in 1907. Construction was begun in August 1908, and water was delivered to the first farm units at the beginning of the 1910 growing season.

The government spent $2.72 million on the project. Its two main features are the 51,000 acre-ft capacity East Park reservoir and the 50,200 acre-ft capacity Stony Gorge reservoir.

The water users still owe the government $1.25 million on the project. The sum will be repaid over a period of 20 years.

THE LONGER LOOK:

Construction industry chalks up a record—a bad one—in labor-management relations, figures show

W. H. Chartener
McGraw-Hill Economics Department

Construction led all other industries in work stoppages in the year 1953.

It was first by a good margin in number of stoppages begun during the year, in number of workers involved, and in total man-days of idleness and percentage of working time idle because of work stoppages. In 1952, also, despite the strike which shut down the steel industry for two months, construction led in number of stoppages and number of workers involved.

Figures for work stoppages in construction during 1954 are not yet available. The United States Bureau of Labor Statistics, which collects and analyzes these figures, publishes them for individual industries on an annual basis.

There have been fewer big strikes in construction this year. But work stoppage statistics for all industry, published monthly by BLS, so far have been running about a third below 1953. So construction could well hold the lead again for 1954, though with somewhat lower totals.

Part of the explanation for the spate of work stoppages undoubtedly lies in the prosperity construction has enjoyed the last few years. Most of the time lost (91.6% in 1953) was in disputes over wages and other economic matters. Many local unions have felt they were in a particularly strong bargaining position and have pushed large wage and fringe demands even at the risk of prolonged strikes. In some areas contractors have felt impelled to take strong stands against demands.

In so far as fringe issues were involved, the lag of construction behind other industries was a primary factor in many disputes that developed in 1952 and 1953.

Before the Korean war, relatively few construction workers were covered by insurance or pension plans or even enjoyed paid vacations. The establishment of pension and welfare plans in other industries was attended by strikes in the late 1940s. So it is not surprising that construction—which offers peculiar problems in the administration of such benefits—should see trouble until fringe plans gain wider acceptance.

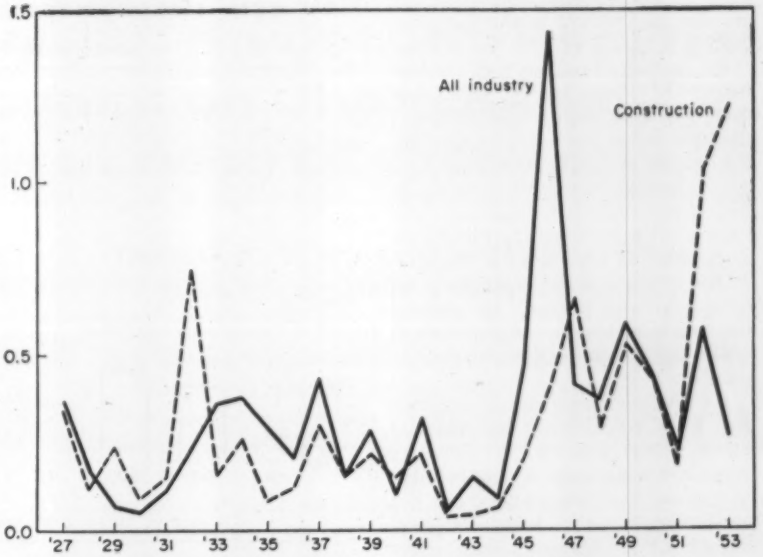
• **Big troubles**—A few big strikes figured heavily in the construction work stoppage statistics in both 1952 and 1953. Of 28 stoppages in all industry involving 10,000 or more workers in 1953, 10 were in construction. And these 10 accounted for about half the man-days of idleness due to work stoppages. In 1952, 11 of the 35 stoppages involving 10,000 or more workers were in construction.

Atomic energy installations produced nine of the 21 major stoppages in construction during 1952 and 1953. The first four of these occurred at Paducah in the confusion that developed over union jurisdiction and various work and pay practices when thousands of new workers were suddenly brought into the area. The four major atomic energy stoppages in 1953, however, were primarily over wage issues. Only one of these nine stoppages lasted for a period of more than 14 days.

Prolonged strikes in metropolitan areas accounted for most of the other major stoppages. In 1952 a wage dispute in the Detroit area idled 70,000 workers and lasted 23 days. Two stoppages of 60 and 32 days, involving carpenters in two California bargain-

(*Continued on page 28*)

Time-loss (%): Construction vs all industry



Economic issues caused most '53 strikes

Major issues	Stoppages beginning in year: Stoppages Number	Stoppages Percent	Workers involved Number	Workers involved Percent	Man-days idle during year (all stoppages) Number	Man-days idle during year (all stoppages) Percent
Wages, hours and fringe benefits	630	60.6	449,000	78.2	7,330,000	91.6
Union organization, wages, hours and fringe benefits	10	1.0	390	.1	4,280	.1
Union organization	112	10.8	18,400	3.2	112,000	1.4
Other working conditions	103	9.9	40,300	7.0	158,000	2.0
Interunion or intraunion matters	176	16.9	64,800	11.3	391,000	4.9
Not reported	8	.8	860	.1	2,510	*
All issues	1,039	100.0	574,000	100.0	8,000,000	100.0

* Less than 0.1 percent.

ing areas, idled 35,000 and 45,000 workers, respectively, in 1952.

A strike in 1953 by the hod carriers in northern and central California, followed by a contractors' lockout, idled 60,000 workers in a stoppage lasting 41 days. In the two Kansas Cities (Missouri and Kansas), a 71-day stoppage over wage and jurisdictional issues put 22,500 out of work.

Other areas that were listed by BLS with major work stoppages in construction during 1952 or 1953 included Milwaukee, New Orleans, Cleveland, Philadelphia, Indianapolis, and the State of Utah.

• **Why strikes?**—Certain characteristics of construction labor tend to push up work stoppage statistics in the industry:

• The industry is highly unionized, and the individual unions generally support each other during strikes. If members of one craft strike and set up picket lines, other crafts will generally stay off the job, also. In such cases, all workers idled will be in the statistics, even though only a fraction are directly involved in the particular dispute.

• Conversely, building trades unions frequently scrap among themselves over job assignments. Jurisdictional disputes always account for a substantial number of construction work stoppages, though they are not nearly so important in figures on time lost. The success of the National Joint Board for Settlement of Jurisdictional Disputes in the Building and Construction Industry has been primarily in reducing the length of these stoppages—through quick settlement—rather than the number.

• Collective bargaining in construction is on a local level. International union officials and national employer association representatives are not able to exercise the restraint they can put on inexperienced or hotheaded local negotiators in industries with wider bargaining areas.

All considered, it may seem surprising that construction has not suffered more from work stoppages. Before 1952 and 1953, there were only a few years—notably 1932—when the percentage of working time lost because of work stoppages was markedly greater in construction than in industry as a whole. The local nature of collective bargaining in construction, however, prevents any single stoppage from having a great impact on the industry nationally. And the great majority of construction projects are completed without any loss of time through labor disputes.

• **Figures reliable?**—How good are the BLS figures on work stoppages? They are probably fairly reliable in measuring the impact of important strikes and lockouts and in tracing year-to-year changes. In some respects, however, the work stoppage statistics are far less reliable.

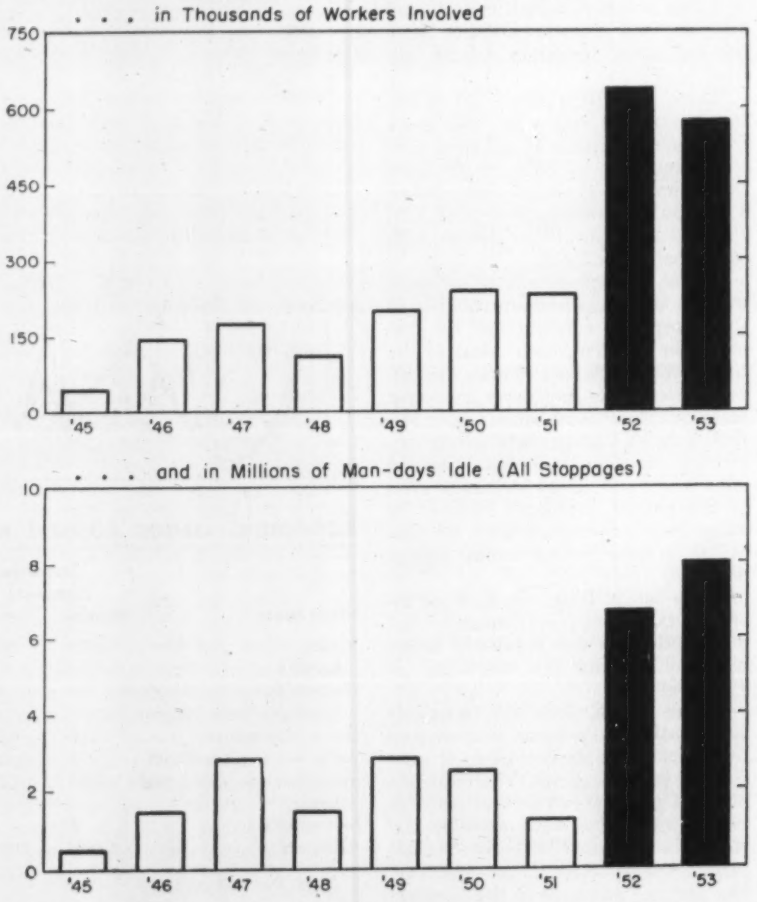
The statistics are compiled through the following up of leads—reports of stoppages in newspapers and from various federal and state government agencies, employers associations and unions. BLS then mails questionnaires to the parties to secure precise information on duration, number of workers involved, issues and method of settlement.

Every known strike or lockout involving six or more workers and lasting as much as a full day or shift is included in the statistics. Only those workers in jobs or establishments that had been directly affected are counted, not workers in other jobs or establishments which may have been obliged to shut down their operations because of the resultant shortages in services or materials.

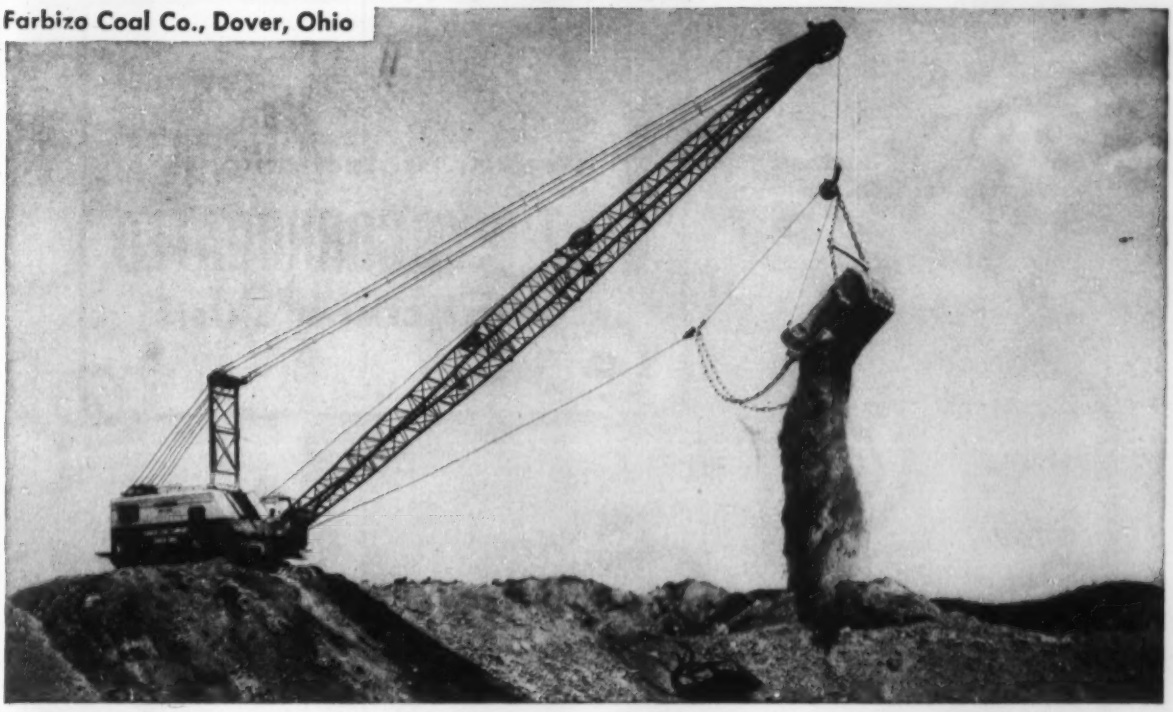
• **More to it**—The principal shortcoming of the statistics is the omission of numerous small and unimportant stoppages which are not picked up by any of the present reporting methods. John T. Dunlop, Harvard economics professor, found this to be true specifically in jurisdictional disputes in the building trades. According to a note by Dunlop in the "Review of Economics and Statistics" (May 1950), the records of the Joint Board on Jurisdictional Disputes, of which he is impartial chairman, show several times as many stoppages over jurisdictional issues as the BLS figures.

Other problems arise in matters of definition and interpretation. The counting of "man-days idle" from a stoppage in a construction project is one example: several thousand workers may be counted as idle due to a work stoppage when weather would have made work unlikely anyway.

New work stoppage record set for '52, '53



Farbizo Coal Co., Dover, Ohio



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Twin G.M.C. Diesels in Marion Shovel Give Outstanding Performance!

Here's the story from the Farbizo Coal Co.:

"Following are the pertinent facts with reference to the Marion 111 M Shovel using DC-330 Oil since January, 1951:

"Developed ample power with TWIN G.M.C. Diesels operating at 1550 R.P.M. Operated 16,280 hours with no motor breakage or repairs. Mined 203,000 tons of #5 coal from 36" seam with an average over burden of 35 feet hard pan shale with streaks of iron ore bands.

"Oil consumption 1 pint per week, oil and filters changed weekly. Consumption is same as when shovel was new. Motors were recently inspected but no repairs or replacements needed. Unusual performance praised by G.M.C. and Marion Shovel representatives.

"Similar results using DC-300 Oil in two Gradall shovels and International TD 24 Bulldozer."

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Steelmaking expansion:

A challenge to ingenuity

H. J. Gehring
Assistant Chief Engineer
Pittsburgh Steel Co.
Pittsburgh, Pa.

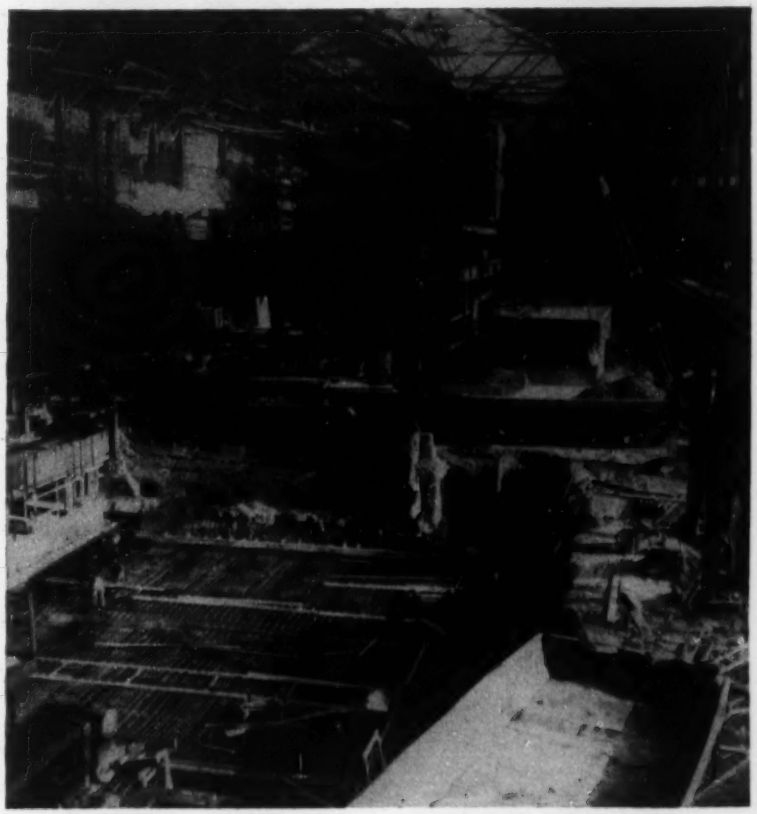
Plant reconstruction—usually for increased capacity or for new products—seldom presents as clear-cut a picture as does an all-new job. But there can be just as great a challenge to the constructor's imagination, especially when the reconstruction involves an expenditure of $65 million, and covers the full scale of an integrated steelmaking operation.

The three-year modernization of Pittsburgh Steel's plants at Monessen and Allenport, Pa., both on the Monongahela River southeast of Pittsburgh, presented such challenges. The story of just one project unit—reconstruction of the soaking pits at Monessen—will illustrate the kind of problems encountered. Multiply this account several times, add some million of dollars worth of new machines and buildings, and you have the $65 million story.

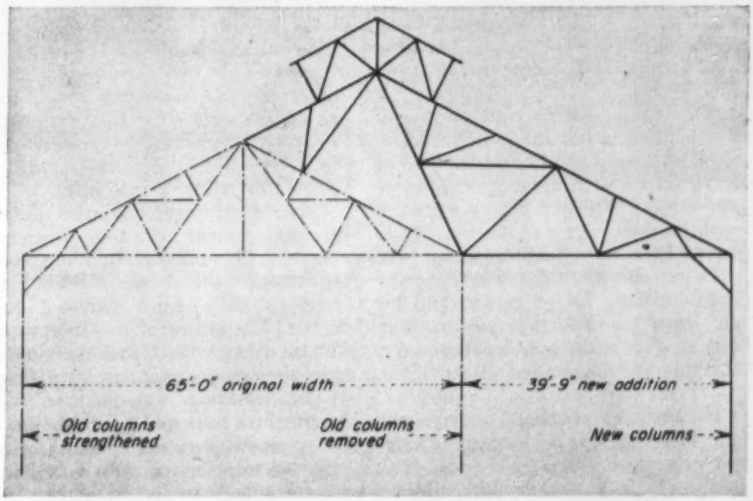
• **Overall project** — Beginning with steel-making at Monessen, Pittsburgh improved two blast furnaces and increased open-hearth capacity 48%. Soaking pits were enlarged; and a new blooming mill was installed. The Allenport mill, primarily a pipe-finishing plant, was improved by (1) construction of a complete new hot sheet rolling mill with pickling and finishing facilities; (2) a new cold rolling mill for steel sheets, complete with annealing and finishing facilities; and (3) new tubular finishing facilities. An old seamless tubing mill was removed to make room for the cold roll facilities.

One of the objectives of the whole construction program was to bring balance into Pittsburgh Steel's overall activities. (Integration means that the firm can make steel from all its own iron, and finish all its steel. There is no need to sell or buy at any of the steps leading to finished sheets, strip and pipe or tubes.) Incidentally, the company's historic wire-products activities were largely unaffected by the construction program.

What the $65 million figure bought is a 48% increase in capacity to produce steel ingots, and an 82% increase in the capacity to convert the ingots into steel products.



SOAKING PIT EXPANSION at the Pittsburgh Steel Co., Monessen, Pa. plan required wider building, bigger cranes and stage reconstruction of furnaces.

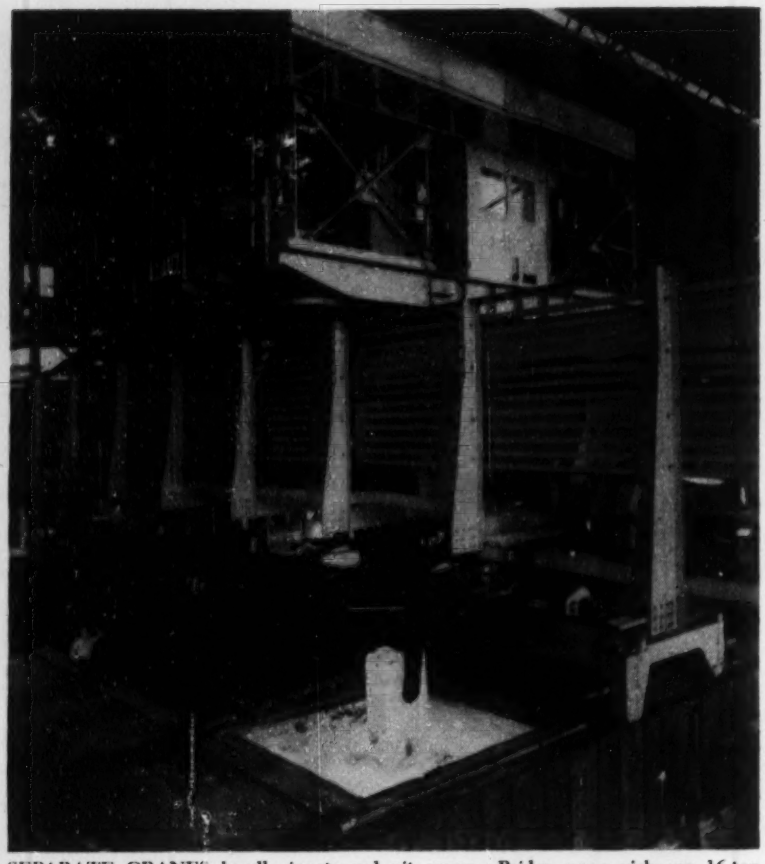


ROOF TRUSSES were lengthened as shown by solid lines. Old roof remained in place so reconstruction and operation soaking pits could continue unaffected by weather.

• **Soaking-pit enlargement**—Substantially greater than the ingot-capacity increase was the soaking-pit increase, from 75,000 tons per month to 133,000 tons per month.

In the steel-making process, soaking pits are located between the open-hearth furnaces and the slabbing or blooming mills. After a furnace is tapped into a huge ladle that holds a whole melt (about 250 tons), the molten steel is poured into a series of ingot molds. When the ingots,

(Continued on page 32)



SEPARATE CRANES handle ingots and pit covers. Bridge crane picks up 16-ton white-hot ingot; short-span crane riding furnace walls stands by to replace cover.

weighing up to 16 tons apiece, have solidified, they are stripped from the molds and transferred to the soaking pits.

The soaking pit prepares the ingot for slabbing or blooming, by bringing it up to a white heat until the ingot is "soaked," or heated through by a gas flame. The pit is a huge oven with its door, or cover, on top. It is served by a cover-handling crane that rides on the pit walls; also by overhead traveling bridge cranes, and by an ingot transfer car railroad that carries the white-hot ingot to the slabbing and blooming mill.

• **Expansion problems**—This was not the first time the Monessen soaking-pit capacity has been increased. The old 65-ft wide soaking-pit building, built in 1908 with five blocks of pit furnaces in it, had accommodated a sixth block of furnaces in 1911. Then in 1940 the building was lengthened from 325 ft to 430 ft to make room for a seventh block of furnaces. This was the limit of length-expansion; the next enlargement had to provide greater width—and all-new blocks with larger pits.

The new width, 104 ft 9 in., allowed installation of five three-pit blocks where four blocks had been before. Each new block of pits has a capacity of 18,000 tons per month. Remaining in service are two of the original blocks of five-pit furnaces with 9,000 tons per month capacity per block, and the 1940 block, with a 25,000-ton rating in six holes.

Increase in ingot size also called for enlargement of the overhead cranes. The original building contained two 10-ton cranes. The enlargement called for a pair of 25-ton cranes. Magnitude of this increase is indicated by the fact that the cranes' span also was increased to 99 ft 6 in.

The building was widened by lengthening each roof truss (as shown in the drawing), inner columns being removed to make room for new crane erection, and to accommodate pit construction as it proceeded.

• **Construction sequence** — The new pits were built in groups of two, two and one, after sufficient old pits were dismantled each time. The remaining old pits continued in operation until the first bank of new pits was completed and put in service. Then the cycle was continued until all of the new pits were completed.

New columns were erected about 40 ft beyond the existing columns on one side of the building; the old columns on the other side were reinforced. Truss-lengthening then took place. The job was kept under roof during all of the construction period.

While this was being done, the new crane runway girders were installed, a sufficient number of the old building columns on one side were removed and the new cranes were erected at one end of the building; meanwhile the old cranes were still in operation.

When the new cranes were ready for use, the old cranes were taken down and the remaining old building columns were removed.

Four types of fuel can be used in the soaking pit furnaces: coke oven gas, natural gas, mixed gas—which is a mixture of blast furnace gas and coke oven gas—and oil. Normally, the furnaces operate on mixed gas.

Each of the five new pit furnaces required a 72-in. stack, 125 ft high, with 81½ cu yd of foundation concrete. Each of the furnaces required 35 cars of refractories and 425 cu yd of concrete foundation.

For the pit furnaces it was necessary to drive 135 steel piles of 13⅜-in. seamless tubing, to a depth of 40 ft to 60 ft. These were filled with concrete.

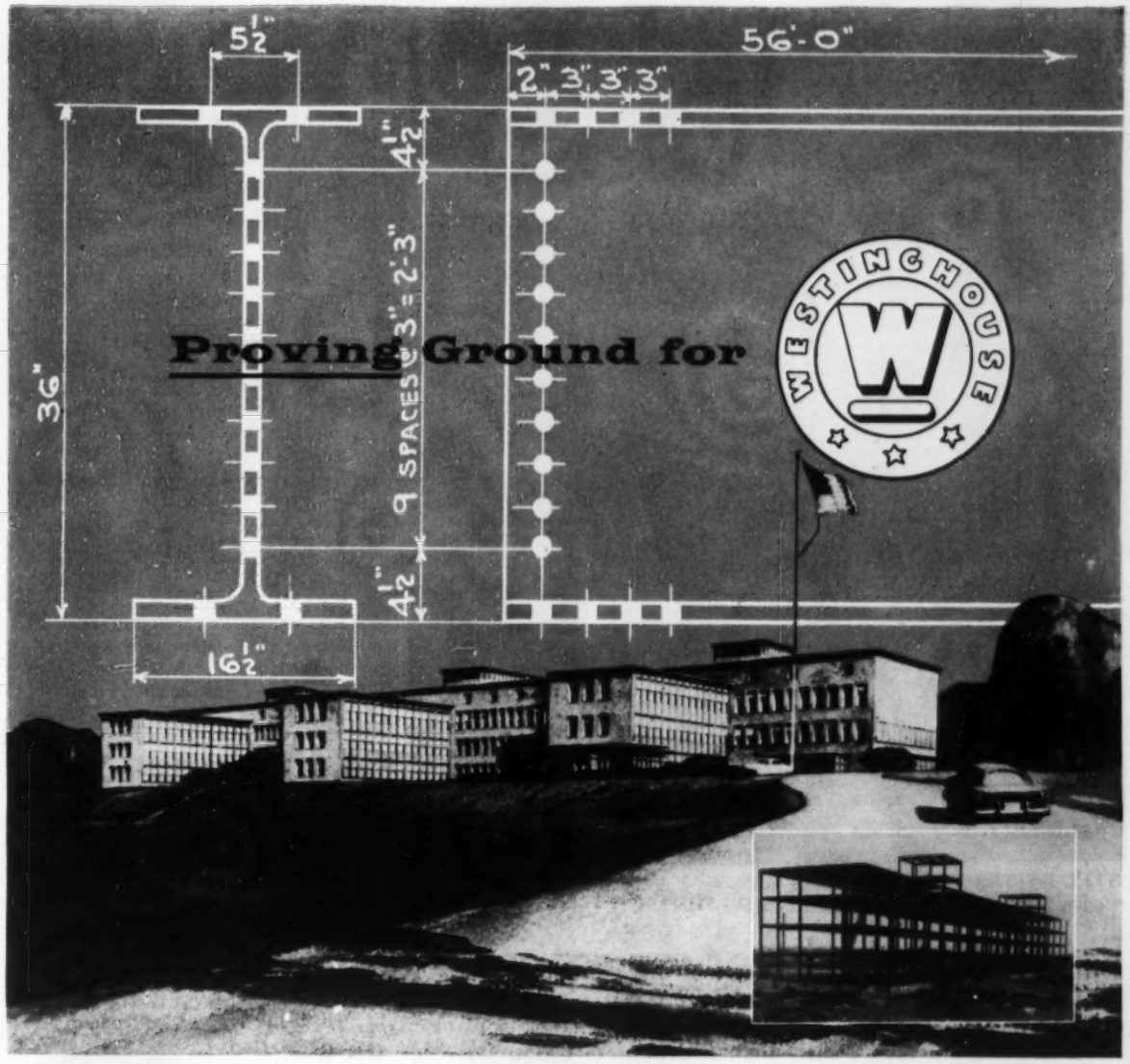
The operating platform was completely remodeled; it was also enlarged to take care of fuel controls and operating booths. The controls are fully automatic to assure efficiency in operation.

The use of a new and larger buggy, weighing 105 tons, to transport the hot ingots to the blooming mill, made it necessary to rebuild the track supports.

Six of the original building column foundation piers were removed and larger piers were built in their place, by shoring the columns.

Contractor for the soaking-pit building enlargement was Minnotte Bros. Co., of Pittsburgh. General foundation and excavation contractor was John F. Casey Co., Pittsburgh. Casey and Minnotte also handled other major parts of the work at Monessen, including the open hearth building and stripper building. The slabbing mill work was handled by Patterson-Emerson-Comstock, Inc., Eichlay Corp. and Blaw-Knox Co., all of Pittsburgh. Burrell Const. and Supply Co., of New Kensington, also worked at Monessen, as did a large number of mechanical firms.

Principal contractor at Allenport was Ragnar Benson, Inc., of Chicago and Pittsburgh, the amount of the Benson contract alone (hot and cold sheet and strip mills) being $15 million.



Artist's Rendering of Westinghouse Research Laboratory at Churchill Borough, Pa.

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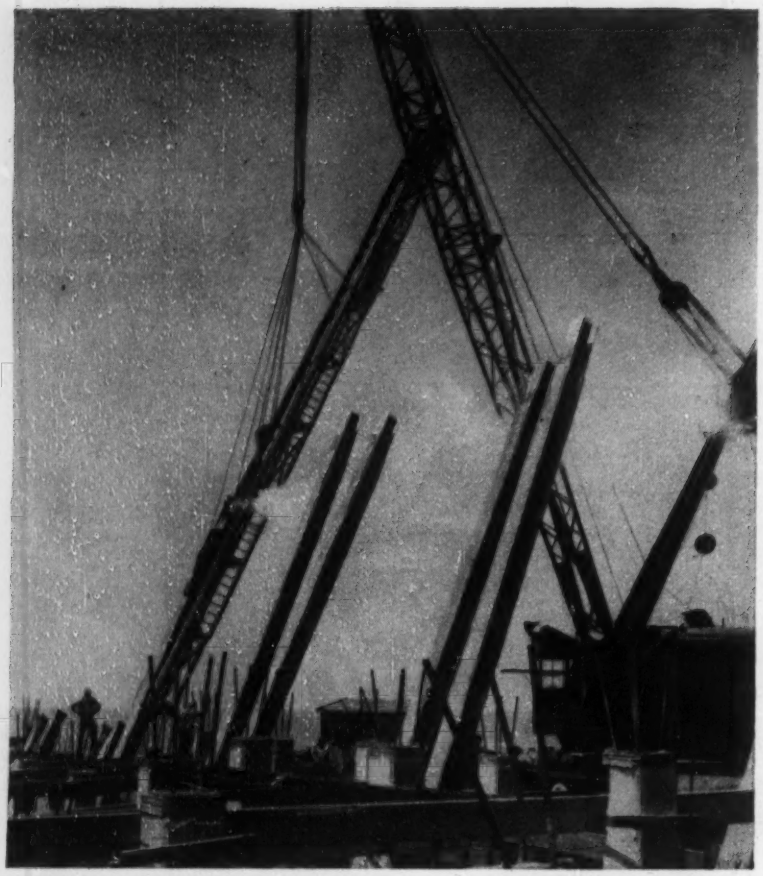


STEEL BATTER PILES with gunited coatings are driven by a steam hammer in swinging leads for an oil loading wharf near San Francisco.

Fireproof dock serves refinery

Gunite-jacketed steel batter piles, concrete piles and precast concrete deck units combine in new Union Oil Co. facility near San Francisco

Steel H-piles with gunited coatings have been successfully driven for the first time in a San Francisco Bay Area wharf.

These long piles are driven on a 12 on 5 batter. The steel section provides resistance to bending during driving; and the coating protects the pile in place against salt water corrosion.

The 1,250-ft long wharf with its 1,678-ft approach causeway will provide oil tanker and barge loading facilities for the Union Oil Co. at its Oleum, Calif., refinery on San Pablo Bay north and east of San Francisco Bay. Due to be completed this winter, the new $3 million installation replaces a wooden structure that was virtually destroyed in a fire in 1952. The new wharf, being almost entirely concrete, is completely fireproof except for the wood-pile fender system.

The 278 batter piles, each 115 ft long, provide resistance to such lateral thrust as wind and docking loads. Vertical loading is taken by 1,325 concrete piles. The deck system includes extensive use of precast concrete elements.

The main problem in connection with gunited coatings is bonding the material so it will not spall or crack during driving. Satisfactory results were obtained at Oleum, but even so the gunite coating on a small percentage of the piles cracked under driving forces. The cracking was restricted to the upper end of the steel piles and patching was found to be simple. For later piles, the contractor developed a method of installing shear bars welded to the upper 15 ft of the piles, with considerably improved results.

• **Answers to cracking**—The design engineers believe other answers to the cracking problem could also be found: A much heavier concrete encasement might be cast on the upper 10 or 15 ft of the pile; or there might be some merit in using much heavier steel sections with no coating to provide allowance for corrosion.

In the fabricating process, the 14-in., 73-lb bearing piles were first welded in 115-ft lengths. Then the steel was given a light sand blasting to remove loose scale. Next, a cage of 2x2-in., No. 12 galvanized wire mesh was attached to each pile to provide reinforcing for the gunite. The wire mesh was held out from the steel sections by ¾-in. dia steel pencil rods crimped at 16-in. centers to provide ¾-in. clearance between the steel and the wire mesh. The crimped pencil rods were spot welded to the steel. Next, the galvanized wire mesh—which had been cut to size and then pressed into the shape of the pile—was tied to the rods.

The 2-in. thick gunite was applied in two stages to eliminate sloughing of the thick coating. Mix was 8 sacks of cement to 2,800 lb sand (about 1 to 4). Seven-day strength of the resulting concrete reached 5,000 psi.

• **Piledriving**—The steel piles were set in place by a floating crane and rested on wale fastened between the previously driven concrete piles. The piles reached about 50 ft into the mud and water before driving was necessary. The steel piles were driven with a 15,000-ft lb single-acting steam hammer in swinging leads suspended from a floating crane.

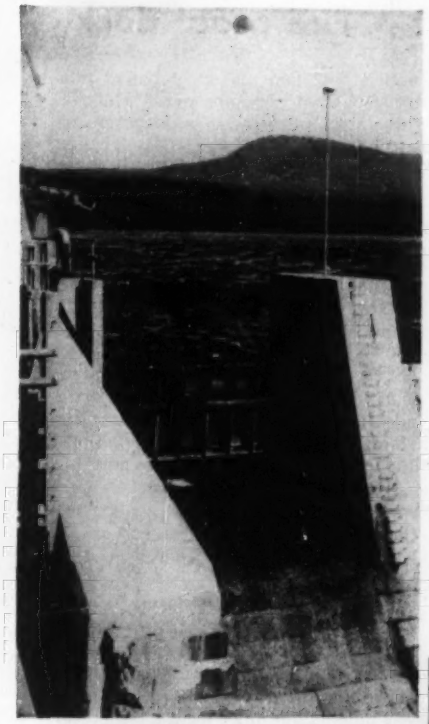
Almost all of the batter piles are located in the 1,250-ft long wharf (as opposed to the approach structure). And the greater percentage of the batter piles is at the outer edge of the wharf.

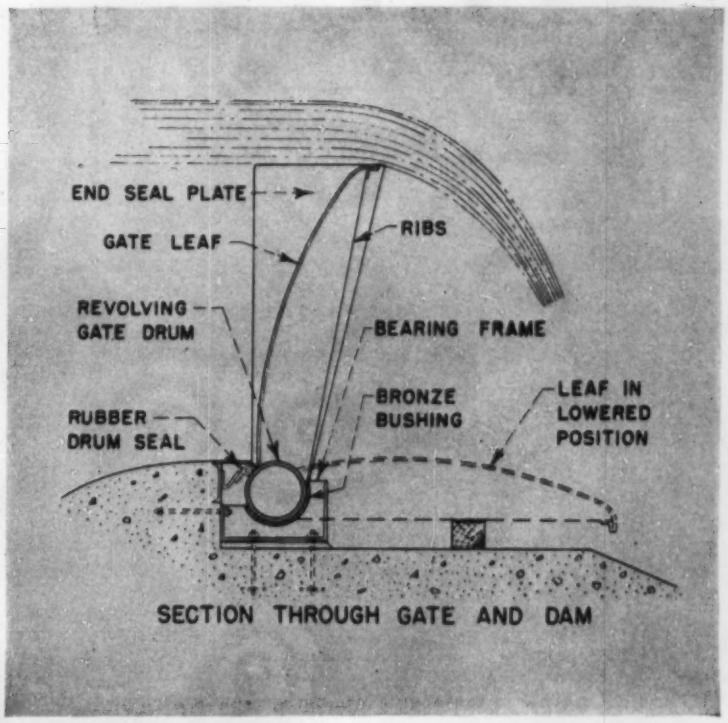
The wharf is 136 ft wide including a 65-ft deck structure along the outer edge, a 46-ft wide pipeway and a 25-ft wide deck structure along the innner edge. The outer deck is for servicing tankers; the inner deck for servicing barges.

The solid deck is designed for a 300-ft per sq ft loading, the open pipeway for 75 lb per sq ft of gross area. Concrete pile bents supporting the solid deck structure are on 12-ft centers. Two steel batter piles are positioned between every other pair of concrete piles on the outer edge of the wharf. These are all driven with the batter toward the shore to resist docking stresses.

Additional steel batter piles are driven along the row of the piles that fall about midway across the wharf structure. On this line the de-

(*Continued on page* 36)





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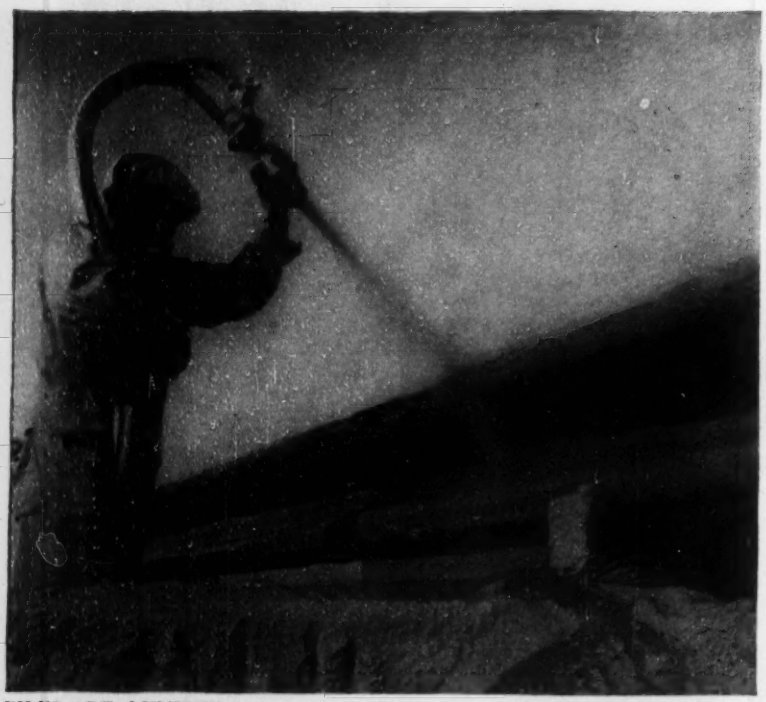
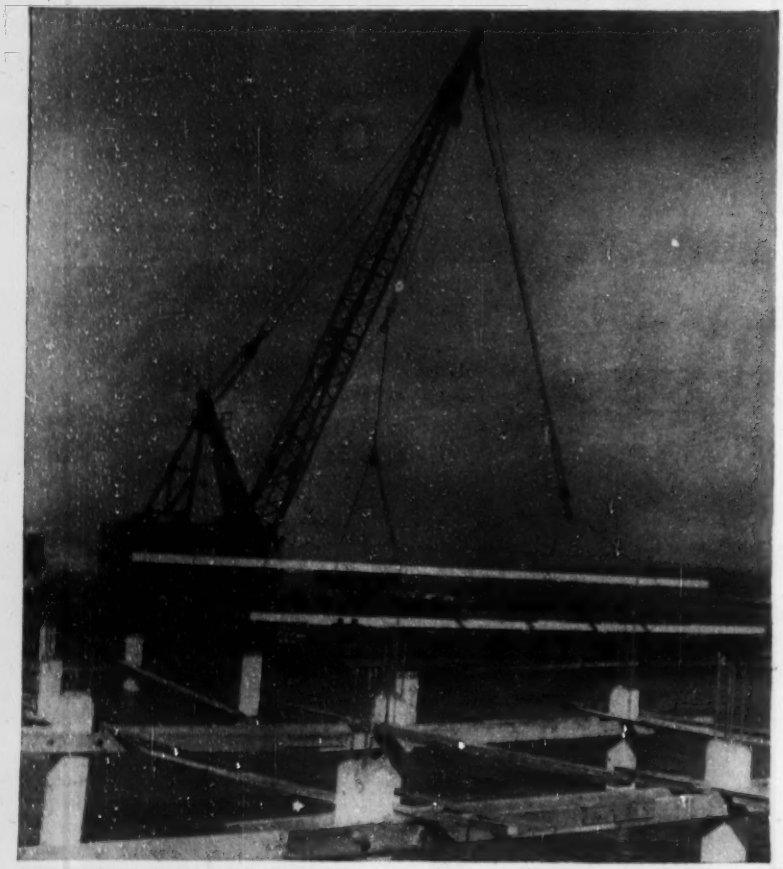


PILES ARE GUNITED in two stages: Wire mesh reinforces 2-in. gunite thickness.



CONCRETE PILES ARE HANDLED by six-point pickup. The 100 and 106-ft long units are barge-hauled to the job from the contractor's casting yard 20 miles away.

. . . Fire proof dock

signers specified one steel batter pile for each two concrete piles. Half of these steel piles are sloped shoreward and half are sloped seaward.

The batter piles are designed for a 40-ton axial load and are intended to resist 25 kips horizontal thrust in either direction.

• **Concrete piles**—Most of the support for the wharf and causeway structures comes from concrete piles 100 and 106 ft long. These piles are either 18x18 in. or 20x20 in. square. Primary reinforcing for the 20-in. square piles is four No. 11 bars and for the 18-in. piles is four No. 10 bars. Both are spiral-wrapped with ½-in. wire.

The bars reach 109-ft lengths with each bar fabricated in one piece for the job. This is one of the first times bars of such lengths have been furnished. It represents a 5% savings in bar cost due to elimination of lapping at bar splices. The long bars were furnished by Bethlehem Pacific Coast Steel Corp. which developed methods of rolling them.

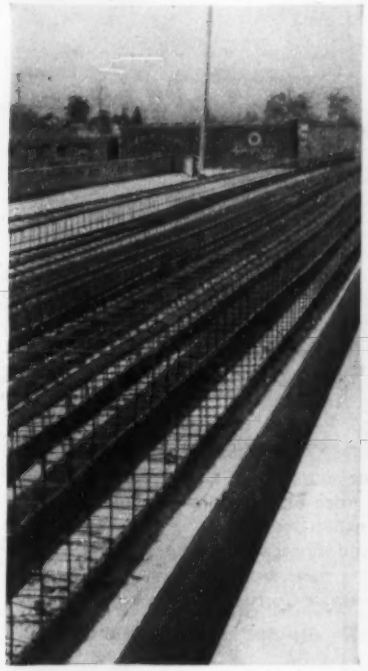
The concrete piles were handled on the job with a 6 point pickup and driven with a 25,000-ft lb hammer mounted on one of the West Coast's largest floating piledrivers.

The 78-ft wide approach causeway is almost entirely supported by concrete piles. Some steel batter piles are provided near the wharf end of the causeway and others provided in an expansion joint section. The approach causeway has a 22-ft wide roadway and a 55½-ft wide pipeway. The causeway is supported by bents on 24-ft centers with each bent composed of five piles. Two of the piles supporting the approach roadway are driven on 2 and 12 batter—these batter piles are concrete.

The approach roadway is decked with heavy precast slabs. These slabs are 24 ft long—spanning the full distance between bents—and are 11 ft wide—half the roadway width. The 8½-in. thick slabs have side beams 2 ft 3 in. deep by 1 ft 4 in. wide. These 25-ton units are handled by a large floating derrick and fit over 1¼-in. rods cast in the bent cap.

The bent cap beams were cast in place using steel reinforced plywood forms.

• **Half depth slabs**—The wharf structure is decked with half depth, precast concrete slabs. These slabs are generally 10 ft 8 in. long and 5 in. thick and include 6¾-in. deep reinforcing bar trusses extending out of the slab. After being placed in the wharf structure an additional 6 in. of concrete is



REINFORCING CAGES for concrete piles include 109-ft long rods specially fabricated for the job.

cast in place with the half deck slab serving as the bottom form.

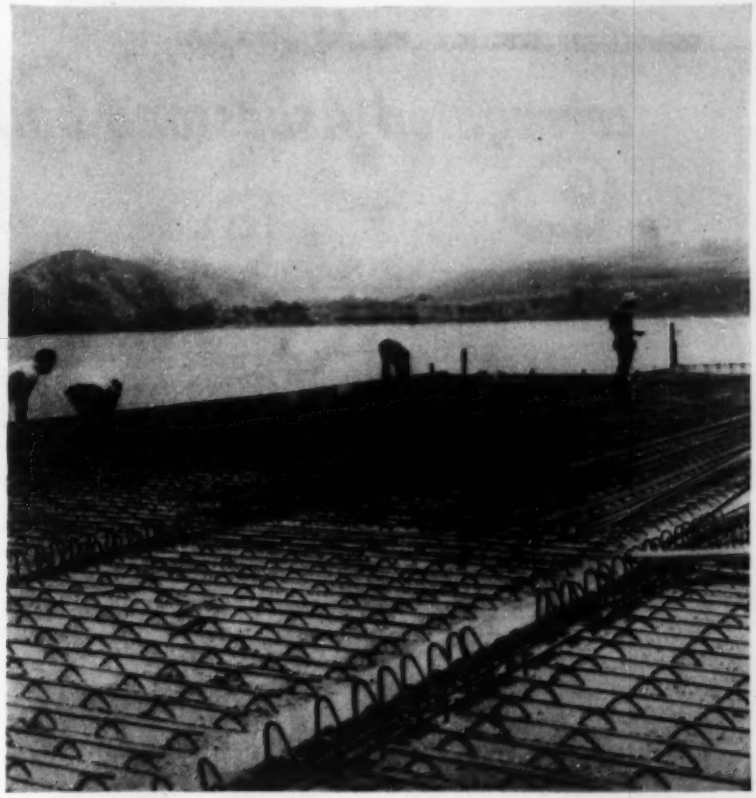
These half deck slabs are similar to units used on a Standard Oil Co. wharf at Richmond, Calif., designed by the same engineers (ENR Nov. 13, 1947, p. 112). The bar trusses at Oleum are slightly heavier and are spaced on 9-in. centers instead of 6-in. centers as at Richmond.

The half deck slabs are placed on cast-in-place transverse beams. Resulting deck thickness at Oleum is 11 in. as compared with a 10-in. thickness at Richmond.

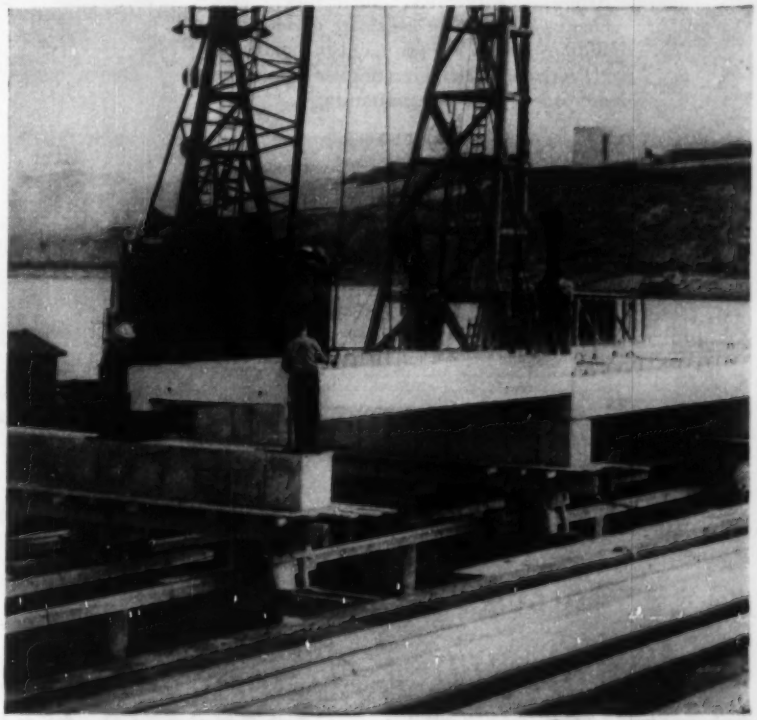
• **Fender system**—The wood pile fender system includes a combination of steel springs and rubber bumpers. The springs are located in pairs on 6-ft centers and have a thrust resistance of 9,000 lb per spring. They are made of 1¼-in. round carbon spring steel with a 3½-in. pitch coiled to 12½-in. outside diameter. The springs are 24 in. open and 12 in. closed.

To provide additional thrust resistance, cylindrical rubber bumpers are hung on 6-ft centers. These 12-in. long hose-like sections are 8 in. in outside diameter.

Construction of the wharf is under the general direction of R. H. Bungay, manager of engineering, and P. H. Wilson, supervisor of construction. Design is by Earl & Wright, consulting engineers of San Francisco. General contractor is Ben C. Gerwick, Inc., of San Francisco.

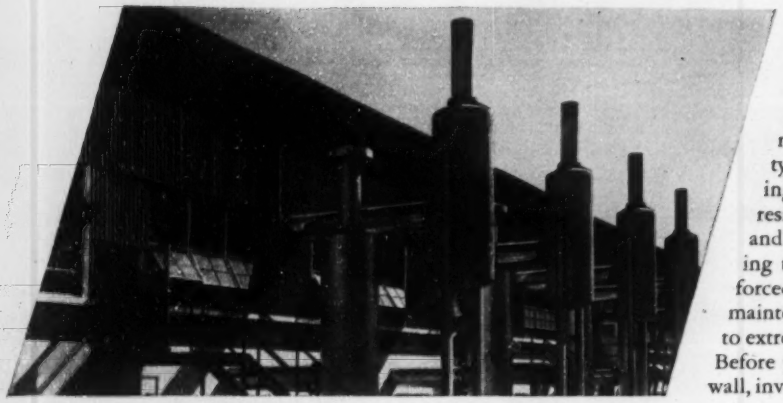


WHARF IS DECKED with precast, half-depth slabs. These serve as bottom forms for pouring remainder of the deck slab. Reinforcing trusses protruding from half-depth slabs bond the deck into an integral structure.



PRECAST SLABS weighing 20 tons each form the deck of the approach causeway. Slabs are 11x24 ft and are set over dowels extending from bent caps.

corrugated Asbestone builds STRONG-



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Width	42"
Lengths	1' to 12' (in 6" increments)
Thickness	Approx. ¼" at the crests and vales, 5/16" at flanks.
Pitch	4.2"
Weight	4 lbs. per sq. ft.
Color	Natural Cement Gray
Depth of Corrugation	1½"
Applications Specifications:	
Minimum Roof Slope	3" rise in 12"
Maximum purlin (roof) spacing	4'-6"
Maximum girt (side wall) spacing	5'-6"
Weight per net square, including side and end laps	Approx. 500 lbs.
Minimum side lap	1 corrugation (4.2")
Minimum end lap	6"

Refer to Sweets—AIA File 12-F

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TWO PAVERS working in tandem start resurfacing two lanes of a 22-mile section of the Pennsylvania Turnpike. On most of the work, mesh is to be applied only over transverse joints and cracks.

Resurfacing starts on Penn Turnpike

A new bituminous surface is being added to the old concrete pavement on a 22-mile section of the Pennsylvania Turnpike in the mountainous region between Laurel Hill Tunnel and Allegheny Tunnel, near Somerset, Pa. The original pavement on this part of the turnpike was put down in 1940. It is a 9-in. thick slab of reinforced concrete laid directly in the subgrade without a granular base or any special provision for underdrainage. As a result, there has been some cracking and pumping.

The resurfacing consists of bituminous binder course of 2-in. minimum thickness and a 1-in. wearing course, reinforced with welded wire mesh to prevent the formation of reflection cracks over joints and cracks in the old pavement.

The mesh is made of No. 10-gage wires spaced 6 in. longitudinally and 3 in. transversely. It is supplied in sheets 11½ ft wide and 7 ft long.

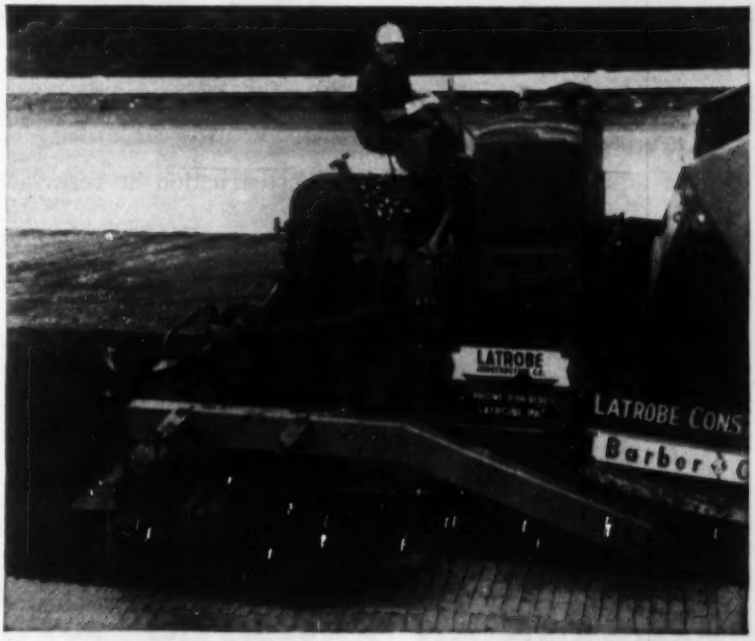
On the initial resurfacing operation, which is shown in the accompanying illustration, the mesh was spread over the entire surface, the sheets being lapped, shingle fashion, away from the paver and with the longitudinal wires on top to minimize the possibility of snagging. Hog rings around six or seven of the longitudinal wires in each sheet were used to tie the sheets together and yet allow some longitudinal movement in the sheets without buckling as the hot mix is applied.

After 4½ miles had been laid in this manner, the engineers of the Turnpike Commission decided to use mesh over only the transverse joints and random cracks.

The binder course conforms to specifications of the Pennsylvania Highway Department. Designed to reduce the possibility of bleeding under heavy traffic during warm weather, it contains larger than normal stone aggregate—up to 1½ in.—with a maximum bitumen content of 4.6 percent.

Initial compaction of the bituminous materials is done with three-wheel, ten-ton rollers. These are followed by two-wheel rollers which do the diagonal and back rolling.

Prime contract for the work is held by the Latrobe Construction Co., Latrobe, Pa., on a bid of $1,045,106. Placing of the wearing course was sublet to the Allegheny Asphalt and Paving Co., Pittsburgh. George H. Chapman is in charge of the work for Pennsylvania Turnpike Commission.



SPRING-CONTROLLED SHOES are used to hold down the outer edges of the wire mesh. Four 80-lb rails, trailing under the hopper, completed the hold-down devices.

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Engineer's "water vision" pays off

"Green light" is given by Charleston, S. C., officials for first stage of one-in-a-million water supply project.

"Ample water forever" is the theme, as Charleston, S. C., makes its bid to parlay a 1.5-million-gallon-per-day water supply potential into establishment of the city as the industrial center of the South.

Approval by the city council of a $1-million bond guarantee for a start in the development of the Bushy Park industrial water supply project, (ENR, May 1, 1952, p. 69) has set in motion a program of construction rarely equaled on the basis of invested capital versus potential return.

• **How did it start?**—In 1945, Arthur M. Field, an industrial developer, came to Charleston from Memphis, Tenn., as chief engineer of the South Carolina city's Development Board, an independent outgrowth of a post-war planning committee.

His search for industrial land available for development struck one snag—lack of an adequate water supply.

The Charleston area had everything else. There were more than 4,000 acres in the Bushy Park and nearby areas with deep-water access to the sea, but the source of fresh water was inadequate for industrial needs. The industrial sites could not be serviced by river intakes because salt-water intrusion extended up the Back and Cooper Rivers, beyond the development areas.

Field, on a 1949 aerial reconnaissance, noted that the Back River, which joins the Cooper at a point to the south of the Bushy Park area, swung back to within a few miles of the larger river at a point to the north of the proposed industrial site.

Tests showed that the upper point of near-joining occurred miles above the limit of salt intrusion on the larger river that has an average daily flow of more than 10 billion gallons fed from the 15,000 sq mi Santee watershed.

Field believed that for a relatively small cost the rivers could be joined at the point of proximity and release an "unlimited" supply of usable water to the industrial areas if the salt water intrusion into the Back River could be blocked.

The plan would, in effect, bring water in at the back door of the industrial district for use in the plants, then industrial discharge would be used for helping to maintain the deep water channel for sea-going ships serving the area at the front door.

The development board brought in Ford, Bacon & Davis, New York consultants to do a feasibility study that resulted in a declaration by Warren R. Bradlee of FB&D that he had never seen so much water for so little effort and money at a site accessible to ocean traffic.

• **Where's the risk?**—For an estimated $2.5 million spent on construction, here is what FB&D have designed.

The diversion canal—slightly over three miles in length—will be a cut averaging 10 feet in depth with a 35-ft bottom width. The slide slopes will be maintained at one on three with lining made unnecessary by the low velocities of flow. It is estimated that it will cost $1 million which includes a highway bridge into the northern portions of the industrial site.

Approximately $1.5 million will be spent on an earth-fill dam across the Back River just above the point where it flows into the Cooper.

It is designed to serve a two-fold purpose. First, it will form a barrier that will block salt intrusion into the Back River, thus making fresh water supply available to the entire Bushy Park area.

Second, it will have a crown width of more than 80 ft throughout its 6,700-ft length in order to carry a railroad spur connection between the industrial area and the mainline of the Seaboard Airline Railway.

Also borne by the dam will be a truck road giving access to the Bushy Park area from the south.

• **Financing**—Total cost of the entire Bushy Park Project including land purchase will not exceed $4.5 million according to estimates.

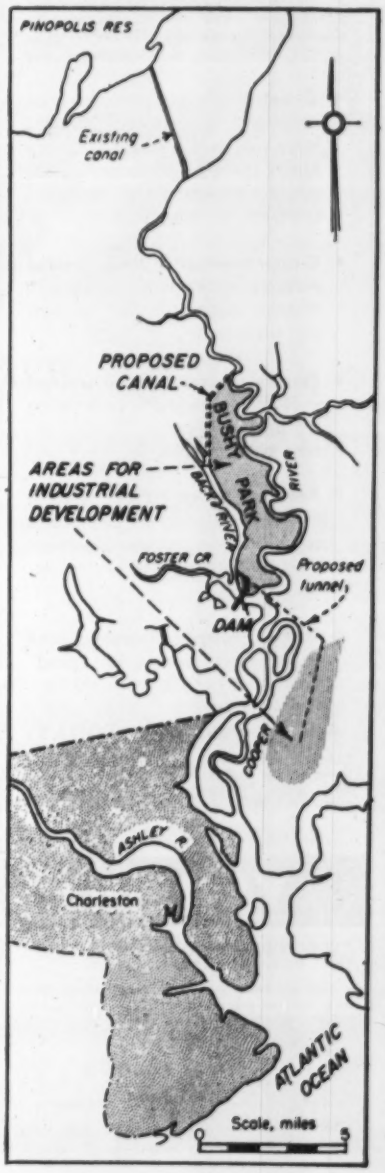
The Bushy Park Authority soon will issue long term revenue bonds in the amount of the $1 million backed by the City of Charleston, now that the city's commissioners of pubic works and the councilmen have approved the guarantee.

The assurance of an "unlimited" supply forever that the city achieved through agreement to service and pay off these Series A bonds, has given the city relief from a critical water shortage that threatens it.

The city now consumes most of its supply from the Edisto River and Goose Creek, and the cost of a tunnel by means of which to supplement its supply from the Edisto would cost about $4 million, increasing the city's supply by only 50 mgd—a tenth of what it could demand from the Bushy Park source if it were needed.

The authority also will authorize long term revenue bonds, Series "B." These will be guaranteed only by the

(Continued on page 42)



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authority and in no way effects the City of Charleston. This new issue will be for $3.5 million, or the balance of the total $4.5 million necessary to complete the undertaking.

• **Here's the breakdown** – Proceeds from the two bond issues will be used in the following manner:

1) Robert E. Lee, head of the Robert E. Lee Construction Co., of Manning, S. C., has agreed to build the dam, bridge and canal for the engineers' (FB&D) estimate of $2.5 million. He will, under the agreement, receive $550,000 of the proceeds of the first issue of bonds.

The rest of his payment for construction will come out of the "B" bonds that would be serviced and paid off over a period of years by the authority. Obviously, any risk that might be involved is being borne by Lee.

2) P. O. Mead, owner of Bushy Park and Cote Bas plantations, has agreed to sell his 4,400 acres for $1 million, with $200,000 cash and the balance in "B" bonds to be paid off over a term of years by the authority.

3) The remaining $250,000 received in cash from the sale of "A" bonds will be used for immediate needs, for engineering fees, and other lands for dike, canal, and access rights-of-way.

4) The $750,000 of unspent authority "B" bonds would be used as needed for additional land purchases or other payments as the project developed and supporting revenue was assured.

Mayor William McG. Morrison, of Charleston, in discussing the unanimous approval given to the city's $1 million investment, called attention to the expenditure by New York City of $550 million for one bgd during the development of its Catskill Mountain water supply.

Warren White, vice president of Seaboard said, "If the City of Norfolk, Va., with which I am familiar, could spend $10 million and get a tenth of the water offered by Bushy Park, the city would turn handsprings of joy."

Cincinnati begins attack on its worst slum areas

Some 57 acres of Cincinnati's worst slums will be eliminated by a new clearance and development project.

The Federal Housing and Home Finance Agency has approved the scheme by allocating more than $3.7 million in a capital grant and $5.8 million more in a temporary loan. Cincinnati will use the federal loan to buy, clear and sell the property, while the grant will cover the loss sustained in the operation. For public improvements and services, the city will spend $2.6 million of its own money.

As soon as a contract between the national and city governments has been signed, two independent appraisals of the 600 parcels of land will get under way. The first parcel may be purchased by mid-January and demolition started in the same month.

The slum elimination program will dispossess about 1,500 families in the area. But one-third of them will be eligible for low-rent public housing.

Record home building rate boosts Atlanta realty sales

Atlanta's record rate of home building this year—largely a result of subdivision developments—is being reflected in a stepped-up volume of realty sales.

A report by 17 firms in the Atlanta area shows that more than 376 sales closed in August for a total of $5.4 million. This compares with 269 transactions and a total of $4.1 million listed by 20 brokers in the corresponding month last year.

The fact that new home sales figured prominently in the sales volume for August is proved by individual figures of the realty firms. With one or two exceptions, the top big-volume leaders concentrated their efforts almost entirely on transfers of new homes. And the firm leading the sales parade (42 sales valued at over $630,000) reports that its entire month's volume was made up of residential sales.

Subway line tries out new 2-way phone system

A new communications system that permits the motorman of a moving subway train to talk to his dispatcher's office is being tested on one of New York City's rapid transit lines. (Under the system now used by the city's subways, motormen have to stop trains at a wayside telephone to report an emergency.)

The new system, installed on an Interborough Rapid Transit line, differs from the one used by main line railroads in that it employs the third —or power—rail to transmit a frequency modulated carrier wave. Railroads have a micro-wave radio relay that is not dependent on continuous contact.

The new device uses 600-v alternating current lines to carry signals to

points along the subway route. These lines, connected to the third rail by condensers, permit passage of carrier waves but do not allow the current to pass in either direction between the line and the third rail.

Signal waves pass from the line to the third rail, through the train's contact shoes. The shoes transmit current to the motors and into a loudspeaker in the motorman's cab. It's this speaker that carries the messages between motorman and dispatcher.

College schedule includes big construction program

Trustees of Ohio State University have approved a campus building program featuring a $2.5-million auditorium, five 11-story dormitories, a research laboratory, a television station and a classroom building.

The auditorium, designed by university architect Howard D. Smith, and Bellman, Gillette & Richards of Toledo, will seat 3,200. Bids for its construction will be advertised this month.

The lab, estimated to cost $200,000, will be used for radio, radar and television research for industry and government. Contracts for the lab and the TV station—also to cost around $200,000—are expected to be awarded sometime in November.

Plans for a dormitory to house 325 coeds will be ready within the next two months, and plans are now being drawn up for four similar dorms to house 1,300-1,500 men students.

The trustees already have approved bids totaling $482,778 for construction of the new classroom structure—a chemical abstracts building.

New water treatment plant —project for Philadelphia

Philadelphia has awarded the contract for the first stage of work on a new $15-million water treatment plant to be erected along the Delaware River at Torresdale. McCloskey & Co., a Philadelphia firm, was low bidder with a quotation of $3,148,511.

Construction of sedimentation basins and equipment will get under way soon, and the entire project is scheduled to be completed some time late in 1958.

The new plant, with rapid sand filters and modern chemical treatment facilities, will be built on the site of the existing plant. The present plant —part of a 50-year-old system—furnishes about 200 million gpd of water, which amounts to about half the city's total supply.

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• **LONG SPAN** In addition to its acoustic qualities, Robertson Q-Deck permits longer spans. This means fewer supports, faster installations, lower cost. This is the gymnasium at St. Edward's High School, Lakewood, Ohio. George S. Rider Company, engineers.

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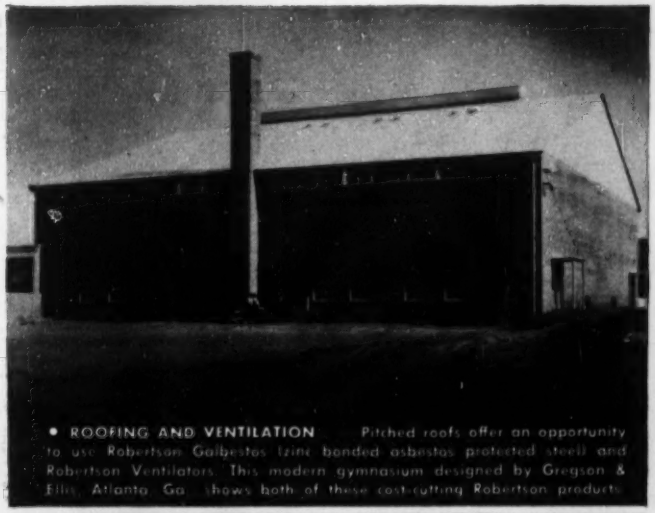
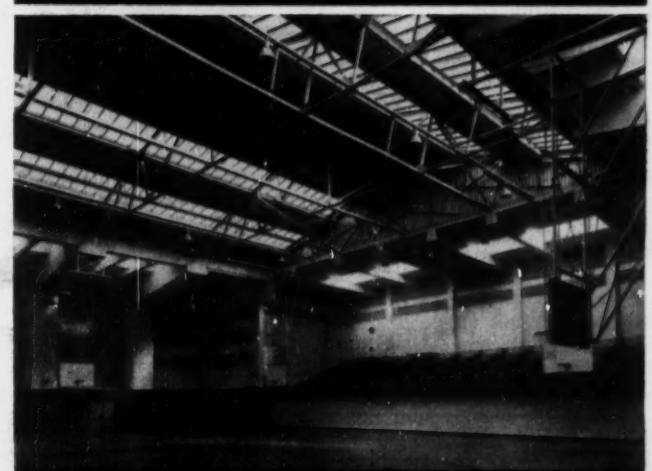
• **BRIGHT CORRIDORS** Daylight is free, so why not use it. Robertson Corrugated Wire Glass Sash is maintenance-free, economical and efficient. George Washington School, E. Moline, Ill. M. R. [illegible], architect.

ROBERTSON products



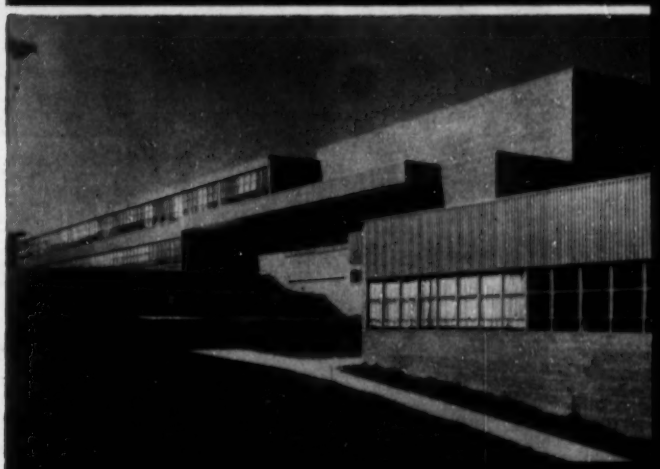
• **ROOFING AND VENTILATION** Pitched roofs offer an opportunity to use Robertson Galbestos (zinc bonded asbestos protected steel) and Robertson Ventilators. This modern gymnasium designed by Gregson & Ellis, Atlanta, Ga., shows both of these cost-cutting Robertson products.

• **BI-LATERAL LIGHTING** At the St. Thomas More School near Niagara Falls, Ontario (Arthur B. Scott & Associates, architects) Robertson Skylights give an assist to sash in classrooms. Robertson Q-Deck can be recognized as the roof construction.

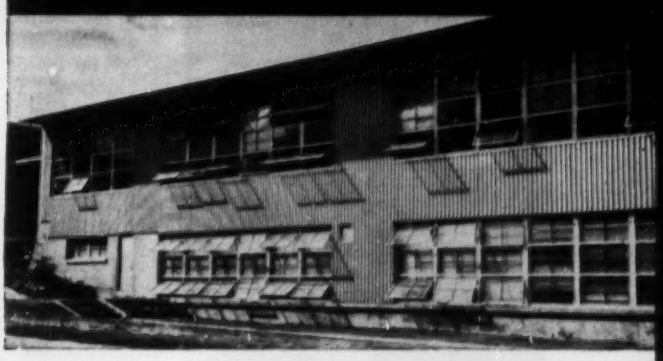


• **GLARELESS OVERHEAD LIGHTING** There is no glare either to contestants or spectators when daylighting is handled like this. These are Robertson Corrugated Wire Glass Skylights at Herbert Hoover High School, San Diego, California.

• **CANTILEVERED CANOPIES** Long span Robertson Q-Deck permits the long overhang desired for covered walkways. This fine example is by Gordon Stafford at his Lincoln (California) High School.



• **INSULATED WALLS — QUICK** Robertson Q-Panels are dry, clean fast construction with unlimited architectural possibilities. Above, they are shown combined with masonry at the Booker T. Washington School at Shreveport, La. (Van Os & Flaxman, architects). Below, Q-Panels at the Carmichael School at Richland, Wash. (J. Gordon Turnbull, Inc., designer).



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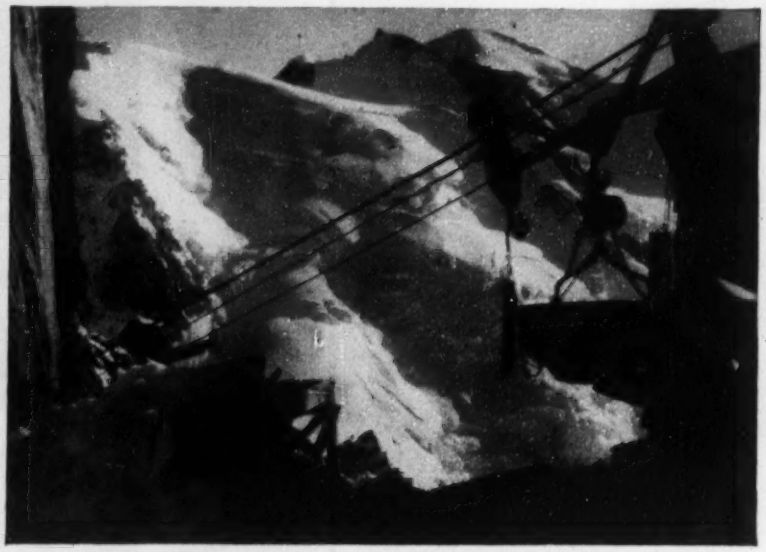


TEMPORARY SERVICE CABLE at the top elevation of 12,600 ft brings up supplies.

World's highest ropeway, over two miles up, being built in French Alps

In the famous Mount Blanc area at Chamonix in the French Alps the world's highest telpherway is being built to an elevation of 12,600 ft.

The ropeway starts at the town of Chamonix, elevation 3,400 ft, and rises in two sections to Aiguille du Midi, one of the most famous peaks in the area. Mount Blanc, under which French, Italian and Swiss interests are planning the world's longest vehicular tunnel, lies about 1½ miles to the south of the cableway and at an elevation of 15,782 ft.

The builders of the telpherway are old hands at the work, having constructed in 1907 the southside cableway from Chamonix to the famous Glaciers ski run at 7,900 ft elevation. Before World War II, work had been started to extend this run up to the Col du Midi at the same elevation and about a half mile from the Aiguille du Midi. But working up to the Col proved too difficult owing to the fragility of the rock in the area.

After the war, the giant Aiguille peak was attacked from the north side with the new telpherway. Work on the first section of the line was completed in June to the Plan de l'Aiguille at 6,700 ft elevation. The second section to the top is being pushed along, but winds and weather allow a small crew to work only about every other day even in the summer time. Practically polar conditions exist year round at the top.

A temporary service cable carrying a flat one yard-wide basket serves to bring workmen and supplies to the top of the line at present. The two hanging booths—which now carry passengers on the first section of the telpherway—have a capacity of 75 persons each.

Cost of the work is still undetermined owing to unforseen problems which pop up every day on the job. But the builders are not worried about this contingency since the profits from its other long-established ropeways in the area aid greatly in financing. Once the line is finished, it's bound to attract a great deal of tourist interest.

Total length of the finished telpherway will be just under 2½ miles with a total rise of about 9,200 ft. Builders are a French-Swiss corporation, the Societe des Telepherique du Mount Blanc, with headquarters in Paris, France.

Old Alpine tunnel scheme revived by Swiss cantons

An old Swiss scheme to link its canton of Grisons with Canton Ticino and northern Italy by means of an Alpine tunnel is being revived—and revised from a railway to a road project.

New plans being prepared by Can-

ton Grisons call for boring a 4-mi road tunnel under the San Bernardino Pass (elevation: 6,770 ft) to provide a year-round route across the Alpine range. The 21-ft road would begin at Hinterrhein at a height of 5,330 ft and end near the village of San Bernardino at 5,270 ft. Construction, a 2½ to 3-year job, would cost about $7 million.

The tunnel would be a permanent link between the two sides of the Alps since the road to Hinterrhein (on one side) and the road to San Bernardino (on the other side) are now kept open by ploughs during the winter months.

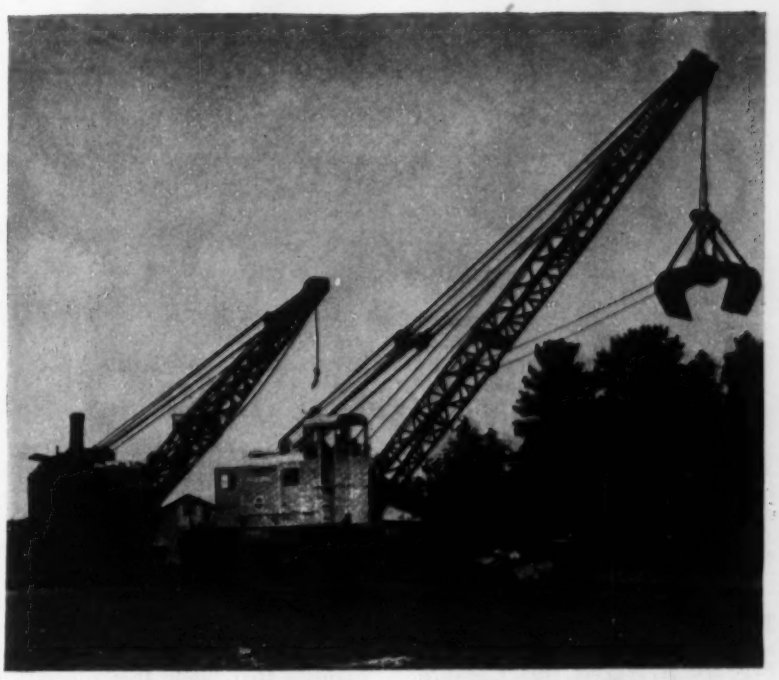
The original plan was to bore a railway tunnel either under the Splugen or the San Bernardino Pass. It would have connected the Rhactian railway network with the Italian railways on the east or with the Swiss St. Gotthard line on the west.

International briefs . . .

• **Philippines push road program**—To speed up its $100-million highway modernization program, the Philippine government has authorized the import of construction material and equipment from the U. S. and Japan. Some $12.5 million has been set aside for work this year and top priority will be given to construction of the following roads: Cotabato-Davao, Misamis Oriental-Lanao, Bacolod north and south, Tacloban-Abuyog-Baybay and Cagayan Valley.

• **Venezuela modernizes highways**—Before the end of the year Venezuela will start work on over 500 miles of new bridge and highway projects in four eastern states (Miranda, Sucre, Anzoategui and Aragua) and two southwestern states (Barinas and Apure). Another highway modernization program is nearing completion along the coast near La Guaira. Total cost of all road work: $80 million.

• **African mining scheme**—Bethlehem Steel Corp., as a result of a two-year survey and prospecting investigation in the Kaokoveld, soon may build a new harbor, railway, and iron-ore mining installations on the coast of South West Africa at a total cost of $85 million. Two large deposits of iron have been located and it is estimated that they can be mined for 75 years at the rate of 3,000,000 tons a year. If impurities can be extracted economically from the ore, the company will build a harbor at Rocky Point and a 110-mi railway from there to the deposits.



DiesELectric Takes Over

Leaders in industry like the Minnesota and Ontario Paper Company must meet stiff production demands. That requires constant alertness to the latest methods and to the most efficient of modern equipment.

As a part of its farsighted mechanization program, the company recently retired its 29-year-old steam crane, above, and replaced it with the latest American 40-ton DiesELectric Locomotive Crane. This huge new machine handles pulpwood, coal, limestone, sulfur and other materials at the Kenora, Ontario, plant, and it is used to switch and spot cars on the mill's tracks when needed.

Throughout the country, industry's leaders are discovering that it pays to switch from old-fashioned steam to modern DiesELectric. They are lowering their costs and increasing production. That means bigger returns on investments.

Many on-the-job stories on how modern American equipment is cutting costs for owners are described in the American Crosby Clipper. If your business is such that these stories are of interest to you, mail the coupon below. You will receive the Crosby Clipper regularly without charge.

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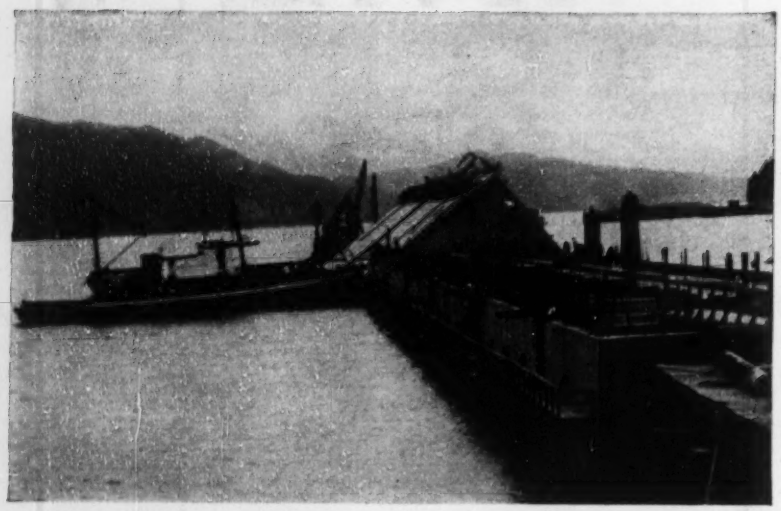

"They tilted 30,000 tons of concrete..."

This unique ore-loading wharf designed in Plastiment-concrete by Frederic R. Harris, Inc., Consulting Engineers of New York, for the Aluminum Company of Canada's gigantic Kitimat project, was cast on its side, floated into place and tilted 90° into final position.

Floating Plastiment-concrete structures are not new. . . . Of the seven American projects featured as Famous Floating Concrete Structures in the May issue of the Journal of the American Concrete Institute, five were constructed of Plastiment-concrete . . . most of the foreign jobs shown also contained Plastiment, supplied from the fourteen overseas Sika manufacturing organizations.

While you may not be designing a floating concrete pier, the special qualities that made this concrete denser, more uniform, and more resistant to cracking and abrasion are undoubtedly a must in your own construction projects. Performance has proven that Plastiment can help you attain this goal.

For the story on the Kitimat project, plus a detailed explanation of Plastiment's exclusive action on cement gels, write for your copy of Sika Job 14 and the illustrated brochure "PLASTIMENT CONCRETE DENSIFIER." Our Engineering Department will be glad to tell you how Plastiment can help you on your present job.

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Contractor cannot collect for work violating a law

A contractor was denied a recovery for work done and materials furnished in installing a sewage disposal system for a building where the septic tank that was installed did not comply with the requirements of a local statute.[1]

(1) Stammer v. Mulvaney, 68 N.W. 2d 671, Supreme Court of Wisconsin, June 2, 1953.

Damage to buildings near municipal work

Where a contractor undertook the construction of street improvements for a municipality and during the performance of that work a house and its contents were destroyed by a fire resulting from gas leaking from a main which had been broken by the contractor during the performance of the work, the court held that under the terms of the contract the contractor was responsible for the losses sustained by the owner of the property.[1] The lower court had dismissed the owner's case but this judgment was reversed on appeal.

The contract contained the following provision: "Property Damage. The contractor shall be liable for all damages to buildings, structures, trees, shrubbery or other property located outside the construction limits, or located within those limits but not designated for removal and not interfering with construction of the proposed improvements. The contractor at his own expense, shall repair, replace or reconstruct such property or otherwise make amicable settlement of such damage claims within 30 days after the claim is filed."

The contractor claimed that the property owner was not a party to the contract and therefore had no right to assert any claim thereunder as a third party beneficiary under the contract. As has been previously pointed out, the contractor's contention was sustained by the trial court but was reversed on appeal.

The appellate court in its opinion stated: "Moreover, in the light of the modern doctrine prevailing with respect to the maintaining of actions on contract by third party beneficiaries, and independent of questions pertaining to the legality of the contract involved, the great weight of authority in the United States now holds that where an improvement, such as is here involved, is made under a contract between a municipality and the

contractor making it, by which the contractor assumes liability for all damages to buildings or other property resulting from the work of constructing the improvement, such contract is to be regarded as for the benefit of an injured party owner who may maintain an action, and if the facts warrant recover, on such action." Many cases are cited to sustain this proposition of law.

(1) Anderson v. Rexroad, 266 P. 2d 320, Supreme Court of Kansas, Jan. 23, 1954.

Licensing of contractors

In many states, local statutes prohibit engaging in the contracting business without obtaining a license to engage in such business. These laws provide that one engaging in such business without obtaining the necessary license cannot maintain any action for compensation for such services rendered. The same rule applies to subcontractors.[1]

Contractors, before entering into contract to perform construction work, should check up to see if there are any statutes requiring contractors to obtain a license to conduct that business in that state, otherwise they might find themselves in the dilemma of having performed work and then being unable to recover compensation for the same.

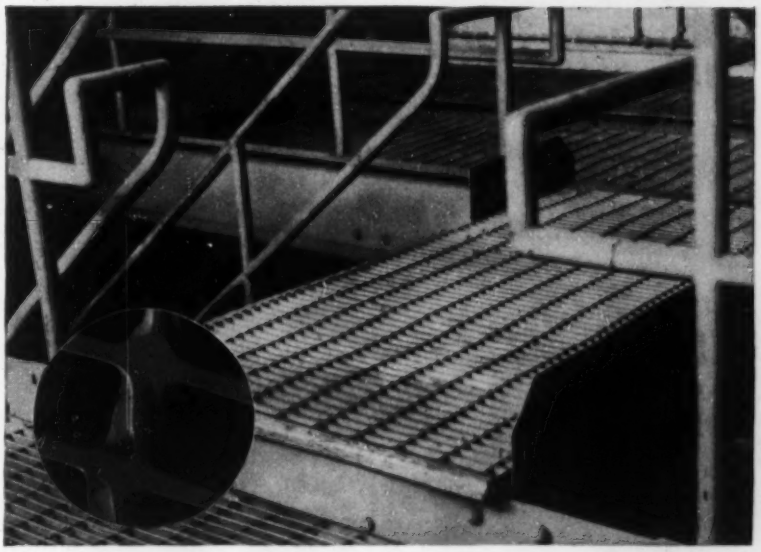
(1) Albaugh v. Moss Const. Co., 269 P. 2d 936, District Court of Appeals of California, May 11, 1954.

Owner must provide site when contractor is ready

"The rule is plain that in every construction contract the law implies a covenant, where necessary, that the owner will furnish the selected site of operations to the contractor in order to enable him 'to adequately carry on the construction and complete the work agreed upon.' Gray v. Bekins, 186 Cal. 389, 395, 199 P. 767, 769; Bomberger v. McKelvey, 35 Cal. 2d 607, 222 P. 2d 729. The rule applies with equal force to construction contracts entered into by a municipality. Bates & Rogers Const. Co. v. Board of Commissioners, D. C., 274 F. 659; 63 Corpus Juris Secundum, Municipal Corporations, section 1185, page 894."[1]

(1) Hensler v. City of Los Angeles, 268 P. 2d 12, District Court of Appeal of California, March 23, 1954.

(These summaries of court decisions are prepared by I. Vernon Werbin, New York attorney and civil engineer.)



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MEN AND JOBS

Two states fill top engineer posts

Authorities of Colorado and Arizona last week announced appointment of two long-time employes to top state engineering posts.

In Colorado, J. E. Whitten was appointed state engineer, to succeed M. C. Hinderlider, who has retired. Whitten, a civil engineering graduate of Colorado A & M College, has been on the staff of the state engineer for more than 25 years, was lately engineer of the department's Irrigation Division No. 1, near Fort Collins.

In Arizona, George E. Lang, a long-time member of the engineering force of the Arizona Highway Department, became state highway engineer, succeeding the late R. D. Canfield (who was killed in an automobile accident after holding office only one month). Mr. Lang for the past three years held the position of resident engineer at Flagstaff.

Men and Jobs Briefs

• **Careers**—First full professor of oceanography for N.Y.U.'s college of Engineering is **Gerhard Neumann,** who joined the staff in 1951 . . . **Ralph A. Hoffman,** dean of the Arizona highway department's engineering staff, has resigned to open a consulting office in Phoenix with **Lloyd Miller,** also a former department engineer . . .

E. S. Laws, structural engineer for Seaboard Air Line Railway, is now assistant division engineer at Raleigh, N. C. . . . **Paul H. Berg** is appointed manager of Kansas River projects for Reclamation Bureau . . . **G. H. Hickox,** formerly of University of Tennessee's engineering staff, joins the National Science Foundation in Washington, D. C. . . . **H. B. Wyndham Jr.** becomes instructor in civil engineering at North Carolina State College . . .

Eugene J. Riordan, city property director since 1948, becomes director of San Francisco's turbulent redevelopment agency . . . **Wendell LaDue,** since 1942 in charge of Akron's water and sewer department, becomes city water superintendent . . . **D. V. Gray,** for six years resident engineer for Army engineers at Wilmington, N. C., transferred to the engineers' Chicago office . . .

George J. Kral has joined the Cincinnati firm of Harry Balke Engineers, as an associate . . . **George Alsdorf** becomes division engineer of the Ohio highway department's Division Six . . . **L. B. Allans,** formerly city works commissioner for Toronto, has been appointed roads and works commissioner for metropolitan Toronto (a municipality) . . . **Paul L. Holland,** Baltimore city director of public works, has resigned to accept private employment; he's succeeded by **George A. Carter,** formerly deputy director . . .

D. E. Rhodes, assistant Montgomery County (Ohio) sanitary engineer, named county sanitary engineer . . . **F. E. Junior,** of the U. S. Bureau of Public Roads at Chicago, becomes project and planning engineer for Palmer & Baker . . .

Albert T. Black becomes assistant state highway engineer (a new post); **S. E. Hicks** becomes engineer of construction, in shifts at the Wisconsin State Highway Commission . . .

V. M. Hare and **W. K. Seaman,** both of the TVA engineering staff, have joined the Boston firm of Uhl, Hall and Rich . . . **R. W. Newell,** Columbia, S. C., building inspector, has resigned to become construction engineer with J. A. Jones Co. . . . **Col. H. G. Gerdes** (CE-Ret) has joined Kaiser Engineers as a power engineer . . . **Frank H. Beinhauer** becomes assistant to the president of J. L. Simmons Co., midwest contractors and builders of Chicago . . .

Lt. Col. Glenn R. Taylor becomes executive officer of the Louisville District, Corps of Engineers . . . **L. F. McGhie** is new assistant dean of Stanford's school of engineering . . .

• **Retirement**—**P. D. Mold,** of Duluth, after 36 years with the Minnesota Highway Department . . . **Paul L. Holland,** who directed the expenditure of more than $250 million in capital improvements for Baltimore, Md., as director of public works . . . **Roy A. Pochel,** city engineer of Middletown, Ohio, after 21 years of service . . . **Robert F. Herdman,** after 41 years of service with the Bureau of Reclamation, that last took him to Bierut, Lebanon . . . **Ray P. Baker,** vice president of RPI, after 39 years' association with the engineering school . . .

• **Associations**—**Glenn A. Hutt,** Cleveland, new president of the Porcelain Enamel Institute . . . **Haldon A. Leedy,** of Armour Research Foundation, re-appointed to the board of governors of the Building Research Institute . . . **David R. Lyman,** for 31 years secretary-manager of the Association of General Contractors of Louisville, retires, to be succeeded by **George C. Long** . . .

OBITUARIES

E. Clinton Earle, 66, chief engineer of Los Angeles Harbor since 1934, died Sept. 30 in Santa Barbara, Calif. From 1910 to 1926 he was chief designing and port works engineer for the U.S. on the construction of Manila harbor and other Philippine ports. During this same period he also acted as consulting engineer for harbor developments in China and Japan.

Nello Naticchione, 49, Philadelphia sewer contractor, died Sept. 19. His firm's projects include Philadelphia International Airport, Levittown, and the Pennsylvania Turnpike Extension.

Osborne J. Dempster, 80, former city engineer for Little Falls, N. Y., and official in the Utica office of the New York State Public Works Department, died Sept. 25 in Hornell, N. Y. He retired from state service in 1936.

Edward J. Whalen, 74, bridge engineer for Buffalo, N. Y., died Sept. 24. Prior to entering city service 15 years ago he was engaged in construction work as a hoisting engineer.

Horace R. Thayer, 81, engineering educator and textbook writer, died in Cleveland Sept. 25. He was professor of civil engineering at Carnegie Institute of Technology from 1906 to 1920, and taught engineering at Pennsylvania State College from 1932 to 1942. Before retirement in 1950 he was with the engineering department of Fenn College, Cleveland.

Wilford B. Robison, 52, former engineer for the city of Toledo and also Toledo division engineer for the Ohio State Highway Department, died Sept. 26 in St. Petersburg, Fla., where he was associated with Visioneering, Inc. Before going to Florida he was a member of the Toledo architectural firm of Bellman, Gillett & Richards. He was graduated from Purdue University in 1923.

David C. Smith, 65, construction engineer for Pittsburgh Piping & Equipment Co., Pittsburgh, died in Indianapolis Sept. 23. He had been with the firm more than 40 years.

Homer C. Kline, 77, former associate civil engineer in the New York State Department of Public Works, died Sept. 26 in Prospect, N. Y. Before retiring from state service six years ago, he was in charge of barge canal operation. He was a graduate of Rensselaer Polytechnic Institute.

In the highly successful operation shown above, a 1-cu. yd. Sauerman Scraper is reclaiming 4-in. gypsum rock at a rate of 33 tph.—average haul 200 ft.

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FR-223 Unloading Ships and Barges
FR-224 Handling Ore with Drag Scrapers
FR-225 Robot Material Handling

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CONSTRUCTION REPORTS

Bids Asked—Low Bidders—Contracts Awarded—First Section—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. O. WETZEL, L. M. WINISKI, M. E. SCIORRA, F. S. DEMBEK, Reports.
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

BIDS ASKED—BUILDINGS

Mass., Needham—WAREHOUSE, etc.—BA 10/27—Kraft Foods Co., F. E. Fricke, engr. dpt., 500 Peshtigo Court, Chicago, Ill., warehouse and office, New England Industrial Center. $800,000. Howard Tonsinger, c/o owner, archt.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ George A. Fuller Co., 11 Beacon St., Boston, Mass. CA Est. $1,268,000. pathology and bacteriology, LABORATORY, Allen St., BOSTON, MASS. Massachusetts General Hospital, Fruit St., Boston, Mass. Bids Sept. 30. CD 9/28.

▲ Campanelli Bros., 186 Boden Lane, Natick, Mass. Owner Builds. $2,000,000. 200 RESIDENCES, Summer and Beacon Sts., FRAMINGHAM, MASS. R. I. Williams, 36 Havilend St., Wollaston, Mass., designer.

▲ C. Sullivan Co., Inc., 15 Clinton St., Newport, R. I. LB $3,056,700, est. $2,200,000. Rogers HIGH SCHOOL, off Ruggles Ave., NEWPORT, R. I. City, High School Comn., Office Supt. Schools, City Hall, Newport, R. I. Bids Oct. 6. CD 9/22.

▲ Dolphin Gardens, Inc., c/o Winston-Muss N K Corp., 22 W. 48 St., New York, N. Y., Owner Builds, $3,800,000. 450-unit garden-type HOUSING, Former Cropp Estate, GROTON, CONN. Edwin Gerber, 1180 Raymond Bldg., Newark, N. J., archt.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION

▲ N. Y., New York—MOVING PLATFORM—BA 10/29—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, moving platform, conveyor sys. between Times Square and Grand Central. $2,000,000. CD 6/1.

BIDS ASKED—BUILDINGS

▲ N. Y., Brooklyn—SCHOOL—BA 11/8—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr.; plumbing and drainage; heating and ventilating; electrical and lighting fixtures for new Public School 21, Chauncey St. and Patchen Ave. $1,744,000. Plans deposit $25 general constr., $10 each mechanical. CD 7/16.

SOON LETS CONTRACT—BUILDINGS

▲ D. C., Wash.—STORE—Abbott Merkt & Co., archts.-engrs., 10 E. 40 St., New York, N. Y., soon lets contract branch store New Hampshire Ave. and University Lane, for Lansburgh Dept. Store, 8 and E Sts. N. W., Wash., D. C. $2,000,000.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ MARYLAND—State Rds. Comn., 108 E. Lexington St., Baltimore, Zone 2,
Erhardt & May, Inc., 5717 Harford Rd., Baltimore 14, Md. LB $2,310,195. grading, drainage, surf. 11.038 mi. road in connection with By-Pass, Glen Burnie By-Pass, Contr. AA 473-7-520, Anne Arundel Co.;
Wright Constr. Co., Box 1580, Columbus, Ga. LB $852,000. grading, drainage, surf. 2.746 mi. dual hy., Annapolis-Washington Expressway, Contr. P 631-15-320, Prince Georges Co.;
Harry T. Campbell Sons Corp., Towson, Md. LB $645,988, grading, drainage, wid'n., surf., resurf. 2.17 mi. State Rte. 542, near Baltimore, Contr. B 619-420, Baltimore Co.;
Hannaman-Burroughs Co., Salisbury, Md. LB $211,708. grading, drainage, surf. 0.968 mi. State Rte. 349, near Salisbubry, Contr. WI 267-2-120, Wicomico Co. Bids Oct. 5. CD 9/22.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ 320 Fulton Corp., c/o Saul Goldsmith, archt., 80 Livingston St., Brooklyn 2, N. Y. Owner Builds. $1,500,000. 6 story OFFICE, 329 Fulton Ave. corner of Cooper St., HEMPSTEAD, N. Y.

▲ Fluor Corp. Ltd., Box 510, Whittier, Calif., CA, design and construct altering PLANT to produce naptha, butanes and gasoline, PAULSBORO, N. J. Socony-Vacuum Oil Co., 26 Broadway, New York, N. Y.

SOUTH

BIDS ASKED—BUILDINGS

▲ Ga., Springfield—SCHOOLS—BA 11/9—Effingham Co. Bd. Educ., Springfield, schools, $1,000,000. Plans deposit $50. Levy & Kiley, Realty Bldg., Savannah, archts. CD 8/27/52.

▲ Ky., Louisville—SCHOOL—BA About 12/1—Bd. Educ., Fifth and Hill Sts., 225x525 ft. brick, concrete block Edward Gottschlak Junior High School. $1,377,000. Otis & Grives, Tyler Bldg., archts. E. R. Ronald & Assoc., 554 S. Third St., engrs. CD 11/30.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Merritt-Chapman & Scott Corp., 260 Madison Ave., New York 16, N. Y. LB $16,003,190. Hampton Roads tunnel and bridges, VIRGINIA. Commonwealth of Virginia, Dpt. Hys., Central Office Bldg., 1221 E. Broad St., Richmond, Va. Bids 10/8. CD 9/10.
▲ FLORIDA—State Road Dpt., Tallahassee,
Massman Constr. Co., 608 Midland Bldg., Baltimore Ave., Kansas City, Mo., CA, $874,611, 1,650 ft. bridge across Escambia River, State Rd. 10, FI-006-1 (8), Jobs 4801-204 and 5801-213, Santa Rosa and Escambia Counties;
Industrial Constr. Co., Box 2797, Jacksonville, Fla., CA, $789,706, bridge and approaches over intracoastal Waterway east of Oakland Park, State Rd. 816, Job 8609-176, Broward Co. Bids Aug. 24. CD 8/27, under LB.
▲† Sun Constr. Co., P.O. Box 1509, Knoxville, Tenn., CA, $2,098,000, Research Bldg. Patrick Air Force Base, ENG-08-123-55-14, COCOA, FLA. U. S. Eng., P.O. Box 4970, Jacksonville, Fla. Bids Sept. 21. CD 9/28, under LB.
▲ Wiley N. Jackson, P.O. Box 110, Miami, Fla., CA, $1,046,960, Parts B, 1, 2 and 3;
Wright Contg. Co., P.O. Box 1777, Columbus, Ga., CA, $666,603, Part C, sanitary sewers;
Carl E. Widell & Son, Merchantville, N. J., CA, $397,257, lift station, HOLLYWOOD, FLA. City, City Hall, Hollywood, Fla. Grand total $2,110,820. Bids Sept. 27. CD 9/16.
J. B. McCrary Co., Atlanta Federal Bldg., Atlanta, Ga. CA $973,707. sanitary sewers, MOSS POINT, MISS. City, Moss Point, Miss. CD 9/28, under LB.
† U. S. Eng., P.O. Box 1229, Galveston, Tex. cancelled bids to have been opened Oct. 22. apron and taxiway paving, Lake Charles Air Force Base, ENG-41-243-55-26, LAKE CHARLES, LA. Will re-advertise. CD 10/6.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† Blythe Bros., P. O. Box 9001, Norfolk, Va., LB $1,737,201, Item No. 1,
Virginia Eng. Co., 80 29th St., Newport News, Va. LB $1,713,302, Item No. 2, for four 263-man BARRACKS, etc., FORT EUSTIS, VA. U. S. Eng., foot of Front St., Norfolk, Va. Millis, Petticord & Mills & Assocs., 3308 14th St. N.W., Wash. D. C. Bids Oct. 5. CD 9/16.
▲ Kenneth Smith, P.O. Box 1441, Daytona Beach, Fla., CA, $1,179,525, HIGH SCHOOL, GAINESVILLE, FLA. Alachua Co. Bd. P. Instruction, Gainesville, Fla. Bids Sept. 28. CD 8/24.
Bradford Builders, Inc., Lincoln Road Bldg., Miami Beach, Fla., LB, $924,442, Junior High SCHOOL, Miami Springs, MIAMI, FLA. Dade Co. Bd. P. Instruction, 275 N.W. 2 St., Miami, Fla. Bids Oct. 6. CD 8/31.
J. H. Mann, Orlando, Fla., Force Account, $900,000. 100 RESIDENCES, ORLANDO, FLA. Hugo R. Broleman, Jr., Orlando, Fla., archt.
▲ G. & H. Home Builders, 2820 Linden St., Homewood, Ala., Force Account, $1,000,000, 125 RESIDENCES, BIRMINGHAM, ALA. V. S. Gravlee, 2820 Linden St., Homewood, Ala., archt.
▲ Folmar & Flinn Corp., general contractors, 10 W. Patten Ave., Montgomery, Ala., Force Account, $1,600,000. 168 RESIDENCES, MOBILE, ALA.
▲ The Henry C. Beck Co., First National Bank Bldg., Dallas, Tex. Owner Builds. $1,000,000. 20 story, bsmnt., OFFICE, SHREVEPORT, LA. CD 5/12.
▲ Hope-Rankin Co., c/o Edgar Hope, 206 Bartlett St., Erlanger, Ky. Owner Builds. $2,500,000. one hundred and ten 1 story, brick HOMES, McAlpin and James Aves., ERLANGER, KY. Geo. Rassenfoss, Jr., 20 Price Ave., Erlanger, Ky., engr. Awarded Oct. 7.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $34,000; other public works $60,000; industrial buildings $82,000; other buildings $300,000. Also Foreign projects of $100,000 and more in size of interest to American contractors.

By Regions & Classes of Construction

(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED

New England
Middle Atlantic
South
Middle West
West of Mississippi
Far West

PROPOSED WORK

Water Supply
Sewers, Waste Disposal
Bridges
Streets & Roads
Earthwork, Waterways
Public Buildings
Mass Housing
Commercial Buildings
Industrial Buildings
Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.
BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.
LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.
CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.
CD dates shown are of Construction Daily issue in which last previous report was published.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over.
ENR Engineering News-Record
CD Construction Daily

For additional reports see Construction Daily.

MIDDLE WEST

BIDS ASKED—BUILDINGS

▲ Ind., Salem—SCHOOL—BA 10/26—City Bd. Educ., Salem, high school $1,000,000. Edward James, 122 E. Michigan St., Indianapolis, archt.
▲ Wis., Racine—SCHOOLS—BA 11/3—Bd. Educ., Racine, McKinley and Mitchell Grade Schools addns. $1,000,000. Plans deposit $20. W. S. Holmes Co., 220 Olds Tower Bldg., Lansing, Mich., archts. CD 6/3.

SOON LETS CONTRACT—BUILDINGS

▲ Wis., Milwaukee—OFFICE—Equitable Life Assurance Society of U. S., 225 E. Michigan St., soon lets contract 5 story, 100x120 ft. office, $1,250,000. Fritz von Grossmann, 4630 W. Burleigh St., Milwaukee, and I. Claven, c/o owner, at 393 7th Ave., New York, N. Y., archts. CD 9/28.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ Robert Anderson Co., 4550 Patterson St., Chicago, Ill., LB $869,664. grade, drain, pave Congress Expressway from Pulaski to Kostner Sts.;
Arcole Midwest Corp., 3225 Main St., Evanston, Ill., LB $832,353, grading, drain and pave Congress Expressway from Laramie to Cicero Aves.; LB $127,984, paving Lehigh Ave. from Old Willow Rd. to Willow Rd., near Glenview; LB $322,966, Willow Rd. from Linder to Provident Aves., near Winnetka;
Contracting & Material Co., 1235 Dodge St., Evanston, Ill., LB $188,184, resurf. Touhy Ave. from Des Plaines River Rd. to Western Ave., Park Ridge;
J. M. Corbett Co., 2501 S. Salt St., Chicago, Ill., LB $480,793, paving Congress Expressway from Kedzie to Sacramento;
Crowley Sheppard Asphalt Co., 1850 S. 12 St., Maywood, Ill., LB $251,689, paving 123 St. from 96 to 80 Aves., Palos Park; LB $199,438, paving 31 St. from LaGrange Rd. to Maple Ave., LaGrange Park;
Frenzel Bros., 3015 N. California Ave., Chicago, Ill. and W. J. Sheppard & Co., 1412 W. Altgeld Ave., Chicago, Ill., LB $963,926, drain, grav., pave Congress Expressway, Pulaski Rd. to Central Park Ave.;
H. A. Goelitz Co., 5757 Ogden Ave., Cicero, Ill., LB $60,506, paving 25 Ave. from Roosevelt to Lexington Aves.;
Thomas McQueen Co., 1313 Circle Ave., Forest Park, Ill. LB $1,206,914, paving, grading, drain Congress St Expressway paving from Central Park Ave. to Kedzie;
Milburn Bros. Co., Crystal St., Mt. Prospect, Ill., LB $79,656, paving 25 Ave. from 22nd St. to 26, near Brookfield;
Orr Constr. Co., 27 19th St., Chicago Heights, Ill. LB $1,009,802, Calumet Expressway, 204 to 213 Sts., Chicago Heights;
Rock Road Constr. Co., 5915 Rogers Ave., Chicago, Ill. LB $347,615, pave 127 St. from Ashland Ave. to State St.;
Standard Paving Co., 30 N. LaSalle St., Chicago 2, Ill. LB $515,477, Calumet Expressway, Glenwood-Dyer Rd. interchange, near Lansing; LB $369,785, Calumet Expressway, Volmer Rd. to 204 St. Chicago Heights, CHICAGO, ILL. Cook Co., Cook Co. Bldg., Chicago, Ill. Bids Oct. 1.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ H. K. Ferguson Co., Ferguson Bldg., Cleveland, O. CA Approx. $1,500,000. FACTORY addn., 1250 Las-

(Continued on page 54)

RUGGED CONCRETE PIPE WITHSTANDS THE SEVERE STRESSES OF JACKING OPERATIONS

The photo shows 84-in. concrete pipe being jacked under several railroad tracks to provide protection for a 48-in. water main of the Metropolitan Utilities District in Omaha. The entire operation was performed during the winter months without any more interference with traffic than the observance of a slow order.

It's another example of how sturdy concrete pipe meets almost any combination of site or soil conditions or drainage requirements. Concrete pipe also stands up under heavy traffic impact, high fill loads and severe climate.

You usually save money by jacking concrete pipe because you minimize roadbed disturbances under railways, highways and streets. Thus you reduce or eliminate costly maintenance often caused by trench fill settlement.

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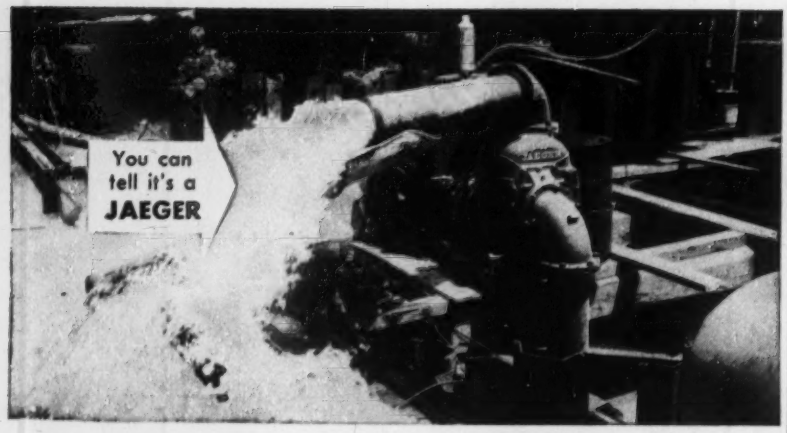

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(Continued from page 52)

key Rd., Washington Twp., TOLEDO, O. General Mills, Co., Inc., 1250 Laskey Rd., Toledo, O. CD 9/8.

▲ Darin & Armstrong, Inc., 2041 Fenkell St., Detroit, Mich. CA Est. $1,000,000. PLANT No. 1, R.R. Shipping Bldg. 13-83 and Bldg. No. 1 addn., FLINT, MICH. Fisher Body Div. General Motors Corp., General Motors Bldg., Detroit, Mich. Bids Sept. 1. CD 8/27.

WEST OF MISSISSIPPI

BIDS ASKED—BUILDINGS

Okla., Ponca City—PLANT GENERATOR—BA 11/1—City, Ponca City, 5400 to 6000 kw. dual fuel engine generator unit for the light plant. $923,000. Pat Schlessinger, Ponca City, engr. CD 10/28/52.

▲ Tex., Orange—HOTEL—BA 11/17—Orange Community Hotel Co., Orange, 4 story, bsmnt., 110-room masonry hotel. $1,000,000. Golemon & Rolfe, 5100 Travis St., Houston, archts. Walter P. Moore, 2 Pinedale St., Houston, engr. CD 5/11.

▲ Tex., Garland—WAREHOUSE—Bids Asked—Safeway Stores, Inc., 4929 Beeman St., Dallas, 500,000 sq. ft. warehouse, in 46-acre tract in Garland Industrial Dist. Approx. $3,500,000. CD 12/23/53.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Builders Constr. Co., Braniff Bldg., Oklahoma City, Okla., LB, $1,336,000, est. $1,250,000. CHURCH, N. W. 25 and Western Ave., OKLAHOMA CITY, OKLA. First Presbyterian Church, 1011 N. Robinson St., Oklahoma City, Okla. Bids Sept. 27. CD 8/27.

▲ Henry C. Beck Co., 607 First Natl. Bank Bldg., Dallas, Tex., CA, $2,000,000. SUPER SHOPPING or MERCANTILE BLDG., DALLAS, TEX. A. Harris & Co., Main and Akard Sts., Dallas, Tex. Smith & Mills, Mercantile Bank Bldg., Dallas, Tex., and Welton Becket & Assocs., 5657 Wilshire Blvd., Los Angeles, Calif., archts. CD 11/2.

▲ R. D. Lowman, 1617 E. Missouri St., El Paso, Tex. CA, $1,315,118, Wm. H. Burges HIGH SCHOOL, EL PASO, TEX. Bd. Trustees Independent School Dist. of City of El Paso, El Paso, Tex. Bids Sept. 9. CD 9/15, under LB.

▲ Farnsworth & Chambers Co., Inc., Box 74, Houston 1, Tex., CA, $1,871,000, Denver Harbor Junior HIGH SCHOOL, HOUSTON, TEX. Houston Independent School Dist., 1300 Capitol St., Houston, Tex. Bids Sept. 17. CD 9/28, under LB.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION

▲† Oregon—BA 12/15—U. S. Eng., Pittock Block, Portland, non overflow dam for The Dalles Dam, Wasco Co., CIVENG-35-026-55-70. $10,000,000.

BIDS ASKED—BUILDINGS

▲ Calif., Norwalk—MEDICAL UNIT—BA 11/4—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Medical Unit, Recreation and Treatment Bldg., Metroppitan State Hospital, $3,000,000. Plans deposit $100.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† General Electric Co., Public Service Bldg., Portland, Ore., CA $11,114,620, eight main generators, The Dalles Dam, Wasco Co., CIVENG-35-026-55-29, OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Oct. 1. CD 10/5 under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Trail Constr. Co., c/o H. R. Watchie, 7335 35 Ave. N.E., Seattle, Wash., Day Labor, $1,700,000. 160 HOUSES in Bridle Trails Park Addn., BELLEVUE, WASH. G. K. Zema, 200 E. Boston St., Seattle, Wash., engr.

CANADA

BIDS ASKED—HEAVY CONSTRUCTION

▲ Quebec—RAILROAD—BA 10/25—Canadian National Rys., R. O. Stewart, ch. engr., 360 McGill St., Montreal, Que., 88 mi. railway branch line Bachelor Lake to Chibougamau, $2,500,000; 70 mi. railway branch line Beattyville to Bachelor Lake, $1,800,000. CD 5/17.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ Cameron Constr. Co., 2 Croham Rd., Toronto, Ont., CA, $1,500,000, five APARTMENT bldgs., Eagle St. NEWMARKET, ONT. G. A. Stewart, 3451 Yonge St., Toronto, Ont. Awarded Oct. 5.

M. Sharp & Son, 11 Manitou Blvd., Toronto, Ont., Owner Builds, $931,200, 11 story, steel, brick, APARTMENT, 2515 Bathurst St., TORONTO, ONT. Harry B. Kohl, 29 Colborne St., Toronto, Ont., archt.

▲ Anglin-Norcross Maritmes Ltd. (Div. of Anglin-Norcross Quebec Ltd.), Halifax, N. S. CA $2,388,934. 6 story, 156x158 ft., L-shaped federal govt. PUBLIC BLDG., Queen St., CHARLOTTETOWN, P.E.I. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont. Bids Aug. 25, awarded Sept. 30. CD 9/1, under LB.

▲ H. Charland, 3589 Tennyson Blvd., St. Michel, Que., CA, $5,000,000. one story, 26x28 ft., brick, concrete DWELLINGS, near Levesque Blvd. in new streets, ST. FRANCOIS DE SALES (Postal Dist., MONTREAL), QUE. Aresville, Inc., 8602 de L'Epee Ave., Montreal, Que.

Proposed Projects——

SEWERS, WASTE DISPOSAL

▲ Ky., Paducah—City, bond election Nov. 2, sewage treatment plant, intercepting sewers. $1,280,000. CD 11/25/46.

▲ Wis., Manitowoc—City, City Hall, imprv. sewage treatment plant. $1,250,000. Consoer, Townsend & Assocs., 351 E. Ohio Ave., Chicago, Ill., consult. engrs. CD 6/16/44.

STREETS AND ROADS

▲ Tex., Arlington—City, street paving, imprvs. $1,250,000. Reaves & Gregory, 3332 W. 7th St., Fort Worth, consult. engrs. CD 9/17.

▲ Tex., Dallas—Dallas Co., Court House, bond election Nov. 2, road constr. $15,000,000; supplemental funds to complete county-wide road imprv. program, $7,500,000. R. H. Clinger, co. engr. CD 5/16/49.

▲ Tex., San Antonio—Bexar County Road Dist. 4, Court House, bond election Nov. 6, certain type road work on 34.6 mi. Freeway on U. S. Hy. 90 east, U. S. 81 south and portion Loop 13, $1,238,000; certain work on 30-mi. roads southeast sect. of county, $322,000. Walter Schulze, county engr. CD 10/2/51.

AIRPORTS

▲† Kan., Topeka—AIRFIELD PAVING—U. S. Eng., 601 Davidson Bldg., Kansas City 8, Mo., airfield paving, lighting and control tower, storage facilities for fuel, explosives and misc. supplies, personnel transportation facilities, imprvs., Forbes Air Force Base, $5,572,300. CD 5/19/52.

▲† N. Y., Rome—AIR BASE FACILITIES, etc.—U. S. Eng., 80 Lafayette St., New York, Zone 13, plans by Greenberg & Ames, 303 4th Ave., New York, Zone 10, RADC facilities, $1,000,000-$3,000,000; plans by Wilcox & Erickson, 11 E. 44 St., New York, Zone 17, NAVARHO facilities FY 55 (clearing), $100,000; NAVARHO facilities FY 55 (structures), $500,000-$1,000,000, foregoing at Griffiss Air Force Base. CD 9/14/51.

PUBLIC BUILDINGS

▲ Calif., Daly City—SCHOOLS—Jefferson Union High School District, Daly City, voted $1,600,000 bonds Oct. 5, Westmoor High School. CD 8/26.

▲ Calif., La Mesa—SCHOOLS—La Mesa—Spring Valley Elementary School Dist., La Mesa, $1,500,000 bond election Dec. 16, for schools.

▲ Calif., Redwood City—SCHOOLS—Redwood City Elementary School District, Redwood City, voted $1,500,000 bonds Oct. 5, 3 new schools, 9 school addns. CD 8/4.

▲ Calif., San Jose—SCHOOLS—San Jose City Unified School Dist., 408 Almaden Ave., plans by Kress, Goudie & Kress, 363 Park Ave., Booksin Elementary School, $500,000; and Toch Lane School, $500,000. CD 2/15.

▲ Calif., San Mateo—COLLEGE ADDNS.—San Mateo Junior College, Coyote Point Campus, plans by Neutra & Alexander, 2379 Glendale Blvd., Los Angeles, Junior College addns. $9,000,000. CD 9/24/45.

▲ Calif., Whittier — SCHOOL — Whittier Union High School Dist., 610 W. Philadelphia St., plans by Wm. H. Harrison, 816 W. 5 St., Los Angeles, reinforced brick El Rancho High School addns. $1,000,000. CD 10/2/52.

▲ Ky., Louisville—MOTEL—Louisville and Jefferson County Air Bd., Standiford Field, motel, incl. 100 units, swimming pool, at Standiford Field Municipal Airport, $1,000,000.

▲ Mass., Amherst—PUBLIC HEALTH—State, University of Mass., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, U-301 Public Health Bldg., University of Mass. $1,250,000, James H. Ritchie & Assoc., 135 Clarendon St., Boston, consult. engrs. CD 12/18, under LB.

▲ Mass., Boston—SCHOOL—City, Dpt. School Bldgs., 26 Norman St., plans by Coletti Bros., 687 Boylston St., Boston, elementary school adjacent to Mission Church, Roxbury, $1,313,000. CD 1/28/53.

▲ Minn., St. Paul—HOUSING—St. Paul Housing & Redevelopment Auth., H. Hutchick, City hall and Court House, plans by W. Butler Co., engr.-archt., Minnesota Bldg., housing, bounded by Jackson, Valley, L'Orient Sts. and Pennsylvania Ave. $6,000,000. CD 10/17/51.

▲ O., Dayton—HIGH SCHOOL—Bd. Educ., Mad River Twp. School Dist., Harshman Rd., voted $810,000 bonds Sept. 28, high school. $2,000,000. CD 7/8.

▲ O., Garfield Heights—SCHOOLS—Bd. Educ., Garfield Heights, bond eelction Nov. 2, schools. $1,500,000. CD 12/11.

▲ Tex., Austin—SCHOOL—Bd. for Texas State Hospitals & Special Schools, 4405 Lamar Blvd., plans by Fehr & Granger, archts. 502 E. 5 St., and Niggli &

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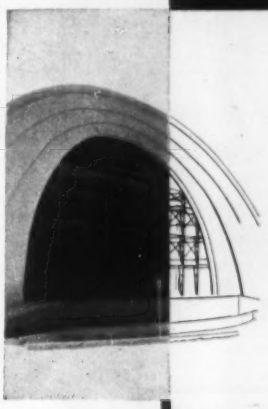

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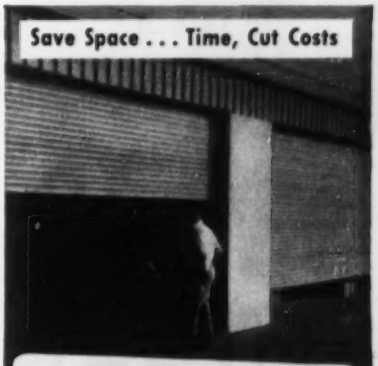

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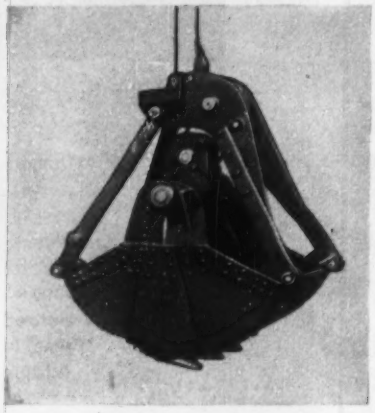

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Gustafson, assoc. archts., 1313-A, S. Congress St., school building program. $2,500,000. CD 5/25.

▲ **Man., Fort Garry**—SCIENCE SERVICE LABORATORY—University of Manitoba, Fort Garry, plans by Moody & Moore, 295 Broadway, Winnipeg, 2 story, bsmnt., 60x210 ft., brick, stone science service laboratory, $1,000,000.

▲ **Que., L'Anse a Fougere** — IMMIGRATION — Dpt. Citizenship & Immigration, Ottawa, Ont. plans by G. Amyat, 2 Belvedere Ave., Quebec City, immigration bldg., $4,000,000. Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., engrs.

COMMERCIAL BUILDINGS

▲ **Calif., Anaheim**—DWELLINGS—Mac Bright, Inc., 8300 Southwest St., 117 frame, stucco dwellings, Chateau, Walnut and Hampshire Sts. $1,250,000.

▲ **Calif., Danville**—DWELLINGS, etc.—Warren Park Corp., 3759 Wilshire Blvd., Los Angeles, 9,000 single family dwellings, shopping center and schools, etc., Warren Park Subdivision. $150,000,000.

▲ **Calif., Oakland**—APARTMENT—Co-Owners, Inc., 2100 Mills Tower, San Francisco, plans by Reimers & Overmire, 525 Commercial St., San Francisco, apartment, 17 and Lakeside Dr. $1,633,000.

▲ **Calif., Oakland**—HOSPITAL—Sisters of Charity of Providence, Providence Hospital, Oakland, plans by John W. Maloney, Central Bldg., Seattle, Wash., hospital addn. $1,000,000.

▲ **Calif., Riverside**—SHOPPING CENTER—M. H. Lerner, 3815 Park Ave., plans by Kleigman & Leizer, 8588 Melrose Ave., Los Angeles, shopping center, 8 and Chicago Sts. $5,000,000.

▲ **D. C. Wash.**—APARTMENT HOUSE—Standard Constr. Co., 1010 Vermont Ave. N. W., Wash., D. C., 455-unit apartment, 4000 Massachusetts Ave. N. W. $10,000,000.

▲ **Ill., Chicago**—OFFICE—Inland Steel Co., 38 S. Dearborn St., plans by Skidmore, Owings & Merrill, 100 W. Monroe St., Zone 3, 17 story, 2 bsmnts., office, Monroe and Dearborn Sts., $20,000,000.

▲ **Ill., Chicago** — HOSPITAL — St. Joseph's Hospital, 2100 N. Burling St., hospital, Lakeshore Dr. and Diversey Blvd. $6,000,000. CD 8/24/53.

▲ **Ill., Wheaton**—QUARTERS—Du Page County Convalescent Home, Wheaton, plans by Robert H. Salisbury, 213 W. Wesley St., home and nurses quarters, near here. $1,000,000. CD 8/24/53.

▲ **Mass., Waltham**—SCIENCE—Brandeis University, 415 South St., plans by Samuel T. Dubitsky, 41 North Main St., Fall River, science bldg. $1,000,000, Goldberg-LeMessurier, 739 Boylston St., Boston, consult. engrs. CD 4/6.

▲ **Mich., Monroe**—SHOPPING CENTER—Ira E. Gumm, 601 Buhl Bldg., Detroit, shopping center, inc. 24 stores, South Monroe St. $1,000,000.

▲ **Mo., St. Louis**—RESIDENTIAL AND INFIRMARY—Masonic Grand Lodge of Missouri, c/o Lewis C. Robertson, supt. Masonic Home of Missouri, 5351 Delmar Blvd., Zone 12, plans by Kenneth E. Wischmeyer, 911 Locust St., Zone 1, 10 story, bsmnt., brick, steel, rein.-con. residential and infirmary bldg. addn. to Masonic Home of Missouri, 5351 Delmar Blvd. $2,250,000.

▲ **Nev., Reno**—HOUSING—University of Nevada, Reno, 100 housing units and classroom remodeling. $1,500,000. CD 12/21/45.

▲ **O., Springfield**—SHOPPING CENTER—Edward J. DeBartolo & Assocs., 2620 Market St., Youngstown, Southern Village Shopping Center, 29 stores, 1,600 auto parking, Selma Rd. and Sunset Ave. $2,000,000.

▲ **O., Springfield**—DORMITORIES—Wittenberg College, Dr. Clarence C. Stoughton, pres., N. Wittenberg Ave., two dormitories. $1,100,000. CD 6/24.

▲ **Ore., Portland**—CHURCH—First Methodist Church, 1219 S.W. Taylor St., plans by Stewart & Richardson, 219 S.W. Stark St., 3-building church proj. $1,500,000.

▲ **Utah, Salt Lake City**—HOSPITAL—Rock Mountain Medical Center, Merrill Larsen, 2665 E. 3210 South St. plans by Niels P. Larsen, 2219 E. 3020 South St., 16 story hospital. $8,000,000.

▲ **B. C., Burnaby**—HOTEL—Astor Hotels Ltd., c/o Metropole Hotel, Vancouver, plans by R. R. McKee, Marine Bldg., Vancouver, 97-room, 4 story, 262x100 ft., drive-in hotel. $1,000,000.

▲ **Ont., Ottawa**—SEMINARY—Roman Catholic Archdiocese of Ottawa, Montreal Rd., plans by E. Martineau, Lyon St., Ottawa, five 2 story, Junior Seminary buildings. $1,500,000. CD 3/6/46.

INDUSTRIAL BUILDINGS

▲ **Calif., Richmond** — WAREHOUSE, etc. — Safeway Stores, Inc., 575 Mission St., San Francisco, warehouse and distributing center, $14,000,000.

▲ **Ky., Covington**—PLANT—Bavarian Brewing Co., 528 W. 12 St., Plant No. 1 bottling shop, addn. to main brewing plant. $1,500,000.

▲ **O., Sugar Creek**—PLANT—Belden Brick Co., 700 Tusc. St. W., Canton, brick plant, tunnel-kiln, gas-fired, adjacent to present plant. $1,000,000.

UNCLASSIFIED

▲ **Texas**—GAS PIPE LINE—Natural Gas Pipeline Co. of America, J. C. Dickinson, pres., 1st. Natl. Bank Bldg., Fritch, 370 mi. large diam. gas pipe line from compressor station at Fritch to Bridgeport. $11,250,000.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
STREETS AND ROADS
November 9 Massachusetts

▲ **Mass., Bedford**—LABORATORY—BA On Or About 11/9—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, 3 story, 58x310 ft. Geo-Physics Laboratory Bldg. F, Bedford Research Center, ENG 19-016-55-38, $1,500,000-$1,750,000. Shepley, Bulfinch, Richardson & Abbott, 1 Court St., Boston, archts. CD 10/31/51.

† **Mass., Bedford**—HANGARS—BA On Or About 11/16—U. S. Eng., 857 Commonwealth Ave., Boston, Zone 15, two maintenance hangars with shops, Laurence G. Hanscom Air Force Base, ENG 19-016-55-39, $800,000-$900,000, Condon Gurenry & Towle, 53 State St., Boston, consult. engrs. CD 5/25.

BIDS ASKED—BUILDINGS

▲ **Mass., Natick**—FERMENTATION, etc.—BA 10/25—Carling's Brewery, O. I. Powell, owner's agt., 9400 Quincy Ave., Cleveland, O. and Canadian Breweries Ltd., 285 Victoria St., Toronto, Ont., Can., 5 story fermentation bldg., 4 story, 50x250 ft. brewhouse, power plant, $15,000,000. Extended date. CD 9/21.

▲ **Mass., New Bedford**—SCHOOL—BA 11/5—City, City Hall, Central Junior High School, Hathaway Blvd., $2,000,000. Plans deposit $100 refundable. Extended date, William Nelson Jacobs Assoc., Park Square Bldg., Boston, archts. CD 9/28.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **John Capobianco,** 101 Tremont St., Boston, Mass. CA $1,203,969. Junior Senior High SCHOOL, HOPKINTON, MASS. Town, School Bldg. Comm., Hopkinton, Mass. CD 10/5, under LB.

George E. Emerson, Inc., 34 Britton St., Pittsfield, Mass. CA $769,310, est. $700,000. South Berkshire Regional SCHOOL, SHEFFIELD, MASS. Town, Bd. Educ., Charles Conklin, Ashley Falls, Mass. CD 10/5, under LB.

MIDDLE ATLANTIC

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 26 Maryland
STREETS AND ROADS
October 25 New Jersey October 26 Maryland

BIDS ASKED—BUILDINGS

▲ **Pa., Uniontown**—HOSPITAL, etc.—BA 10/26—Uniontown Hospital, Uniontown, 4 story, bsmnt., brick, concrete hospital addn., alterations. $1,114,000. Plans deposit $25. J. C. Fulton & Son, 2nd National Bank Bldg., archts. CD 3/6/52.

Pa., Bristol—SCHOOL—BA 11/3—Bristol Twp. School Auth., Rogers Rd., Bristol, Lafayette Elementary School. $900,000. A. E. Micklewright, 72 Ewing St., Trenton, N. J., archt. CD 2/27/47.

N. J., Trenton—SCHOOL—BA 11/4—Bd. Educ., 9 Stockton St., Monument Elementary School. $860,000. Micklewright & Mountford, 72 Ewing St., archts. CD 3/11/53.

▲ **Pa., Selingsgrove**—SCHOOL EXPANSION—BA 11/10—General State Auth., 18 and Herr Sts., Harrisburg, general constr., heating, plumbing and electrical for expansion of Selinsgrove State School. $7,000,000. Plans deposit $100 each. Extended date. Clayton J. Lappley, Riverview Manor, Harrisburg, archt. H. F. Lenz, 227 Franklin St., Johnstown, engr. CD 9/28.

N. Y., New York—HIGH SCHOOL—BA 11/12—Bd. Educ., Bureau Constr., 42-15 Crescent St., Long Island City, Zone 1, general constr.; plumbing and drainage; heating and ventilating; electrical and lighting fixtures for Wadleigh High School modernization, 215 W. 114 St., Manhattan Boro. $999,500. Plans deposit $20 general constr., $12 each mech.

▲ **Pa., North Wales**—MFG. PLANT—Bids Asked—Leeds & Northrup Co., 4901 Stenton Ave., Phila. (by invitation), mfg. plant. $4,000,000. Giffels & Vallet, 1000 Marquette Bldg., Detroit, Mich., archts.

SOON LETS CONTRACT—BUILDINGS

Pa., Wynnewood—SUB-STATION—Phila. Electric Co., 9 and Sansom Sts., Phila., Pa., soon lets contract substation. $600,000. N. C. McHugh, c/o owner, engr. CD 9/2.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **A. S. Wikstrom, Inc.,** Box 217, Skaneatles, N. Y. CA $2,126,369, Alt. A, constr. substructures for Barnhart Island Bridge and temporary steel truss floating bridge connecting Hawkins Point to Barnhart Island over St. Lawrence River, near Massena, St. Lawrence Co., Spec. No. 5422-A, St. Lawrence Contr. No. 3, NEW YORK. The Power Authority of The State of New York, 270 Broadway, New York 7, N. Y. Bids Oct. 6. CD 10/8, under LB.

Planet Constr. Corp., 237 W. 37 St., New York, N. Y. CA $967,000, general constr. for constructing Stage I, of Aquarium, etc., south of Surf. Ave. and east of W. 8th St., Coney Island, BROOKLYN, N. Y. Comr. Parks, at office Dpt. Parks, Arsenal Bldg., Central Park, 64 St. and 5 Ave., New York 21, N. Y. Bids Aug. 24. CD 8/26, under LB.

▲† **Union Building Constr. Corp.,** 631 Main Ave., Passaic, N. J., CA $1,836,286, Schedules 1 and 3; **A. L. Dougherty Co.,** Guaranty Bldg., Indianapolis, Ind. CA $77,526, Schedule 2 for constr. airfield paving, jet fuel storage facility, mounded concrete igloos with crane and hoist, Stewart Air Force Base, NEWBURGH, N. Y. U. S. Eng., 80 Lafayette St., New York 13, N. Y. CD 9/7 under LB.

▲ **PENNSYLVANIA**—Pennsylvania Turnpike Comn., 11 N. 4 St., Harrisburg,

Lane Constr. Corp., 37 Colony St., Meriden, Conn., CA $5,948,649. constr. 4.195 mi. Sect. 36-B, North and South Whitehall Twps.; constr. 5.01 mi. Sec. 36-C, Washington Twp., both Lehigh Co. Bids Sept. 23. CD 9/27 under LB.

B. Bornstein & Son, 2027 Arch St., Phila., Pa., CA $541,000. Westmoreland Playground and development, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Sept. 9. CD 9/15, under LB.

▲† **U. S. Eng.,** 2635 Abbottsford Ave., Phila., Pa., cancelled bids to have been opened Nov. 10, underground storage area in an abandoned limestone mine, for the United States Air Force, 10 mi. north of WAMPUM, PA. Est. $5,000,000. CD 10/1.

R. M. Luff Constr. Co., Willow Grove, Pa., CA $820,800, est. $877,652, sewage treatment plant addn., pipe lines, WILLOW GROVE, PA. Upper Moreland-Hatboro Joint Sewer Auth., 117 Park Ave., Willow Grove, Pa. Bids June 30. CD 7/16, under LB.

Ashbourne Hills, Inc., 703 Equitable Trust Bldg. Wilmington, Del., Separate Contracts, $925,000. RESIDENTIAL DEVELOPMENT, vicinity of Darley Rd. CLAYMONT, DEL.

▲† **C. J. Langenfelder, Inc.,** 8427 Pulaski Hy., Baltimore, Md., CA, $2,833,743, runway alterations, taxiway alterations, warm-up pads and runway and taxiway lighting, Dover Air Force Base, ENG-36-109-55-11, DOVER, DEL. U. S. Eng., 2635 Abbottsford Ave., Phila., Pa. Bids Sept. 24. CD 9/9.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Sherwood Greens Homes,** c/o Parsen Realty Corp., 70 West Montauk Hy., Lindenhurst, N. Y. Owner Builds. $2,000,000. 200 HOUSES, 50-acre tract, east side of Udall Rd., south of Sunrise Hy., BABYLON, N. Y.

Lefrak Organization, 97-27 64 Rd., Forest Hills, N. Y. Owner Builds. $800,000. 7 story APARTMENT, 87 Ave. and 135 St., BRIARWOOD, N. Y. George Miller, 125 W. 45 St., New York 19, N. Y., archt.

▲ **H. R. H. Constr. Corp.,** 16 W. 46 St., New York 19, N. Y. CA $3,942,000, general constr. and foundation;

H. Sand & Co., Inc., 11 Park Pl., New York 7, N. Y. CA $554,300, heating for constr. Sumner HOUSES, Proj. No. NYS-58-4, Sect. 1, incl. Bldgs. 1 to 7 in area bounded generally by Park, Lewis, Myrtle, Sumner Aves. and Broadway, BROOKLYN, N. Y. New York City Housing Auth., 299 Broadway, New York 7, N. Y. Bids Sept. 14. CD 9/21, under LB.

▲ **Planet Constr. Co.,** 11 W. 42 St., New York, N. Y. CA $1,327,000. Public SCHOOL 59, BROOKLYN N. Y. Bd. Educ. Bureau Constr., 42-15 Crescent St., Long Island City 1, N. Y. Bids Aug. 3. CD 9/7, under LB.

▲ **Imperial Gardens Homes,** c/o Stanley H. Klein, archt., 89-31 161 St., Jamaica, N. Y. Owner Builds. $1,000,000. 78 HOUSES, Newbridge Rd., south of Old Country Rd., HICKSVILLE, N. Y.

▲ **Rosewood Gardens Homes,** c/o Stanley H. Klein, archt., 89-31, 161 St., Jamaica, N. Y. Owner Builds. $2,000,000. 150 HOUSES, tract on east bound service road of Northern State Parkway, east of Broadway, HICKSVILLE, N. Y.

▲ **Old Chester Hills Homes,** c/o Herman H. York, archt., 90-04 161 St., Jamaica, N. Y. Owner Builds. $1,500,000. 75 HOUSES, Little Plains Rd., near Cuba Hill Rd., HUNTINGTON, N. Y.

▲ **Homes in Roslyn Estates,** c/o Stanley Shaftel, archt., 89-47 163 St., Jamaica, N. Y. Owner Builds. $2,000,000. 60 HOUSES, 27-acre tract Intervale St., ROSLYN ESTATES, N. Y.

▲ **Burl-Co Constr. Co.,** and **Scott-Shaw Inc.,** Att. George Sirott, Oriental and Maple Aves., Gloucester, N. J., Separate Contracts, $6,000,000. RESIDENTIAL DEVELOPMENT, Cooper St., etc., EDGEWATER PARK, N. J. Lester H. Weckesser, Wallworth Apartments, Haddonfield, N. J., archt.

Oaks Homes, c/o Green Associates, 133 Cedar Lane, Teaneck, N. J., Owner Builds, $800,000. 41 HOUSES on tract at Norwood and Highland Aves., ELBERON, N. J.

Florham Park Estates, c/o H. Milkon Co., 35-12 Broadway, Fairlawn, N. J. Owner Builds, $650,000. 37 HOUSES on tract on Ridgedale Ave. and Keyes St., FLORHAM PARK, N. J.

▲ **Construction Service Corp.,** Att. Bernard Weinberg, 1649 N. Broad St., Phila., Pa., Separate Contracts, $4,000,000, APARTMENT DEVELOPMENT, Pointville Road, FORT DIX, N. J. Edward A. L. Cox, 709 Market St., Camden, N. J., archt.

▲ **Robert Scarborough,** Haddonfield, N. J., Separate Contracts, $1,000,000, RESIDENTAL DEVELOPMENT, Brace Rd., etc., HADDONFELD, N. J. Lester H. Weckesser, Wallworth Park Apts., Haddonfield, archts.

Clover Leaf Lakes, Inc., 708 Camden Ave., Moorestown, N. J. Separate Contracts, $800,000. RESIDENTIAL DEVELOPMENT, Black Horse Pike, MAYSLANDING, N. J. Cox & Guttman, 709 Market St., Camden, N. J., archts.

Timbercroft, Inc., 39 E. Main St., Moorestown, N. J. Separate Contracts, $500,000 RESIDENTIAL DEVELOPMENT, Riverton Rd., MOORESTOWN, N. J. Petty & Croft, 141 Chestnut St., Moorestown, N. J., archts.

Northfield Estates Homes, c/o Krugman & De Petro, 1330 Main Ave., Clifton, N. J. Owner Builds, $780,000. 27 HOUSES on tract at Northfield and Gregory Aves., WEST ORANGE, N. J.

▲ **Catalytic Constr. Co.,** 1528 Walnut St., Phila., Pa., CA, olefin feel preparation splitter and 23-mi. off-site piping at Eagle Point PLANT, WESTVILLE, N. J. The Texas Co., 135 E. 42 St., New York, N. Y. CD 1/21/49.

▲ **Baton Constr. Co.,** 1717 Sansom St., Phila., Pa., CA $3,311,000. general contract Senior HIGH SCHOOL, ABINGTON, PA. Abington School Dist., Abington, Pa. Bids Sept. 23. CD 8/27.

Merrybrook Homes, Inc., 1244 West Chester Pike, Havertown, Pa., Separate Contracts. $950,000. RESIDENTIAL DEVELOPMENT, Lower Merion Twp., BALA CYNWYD, PA.

Nelson W. Plunto, 181 Winder Dr., Winder Village, Bristol, Pa., Separate Contracts. $850,000. RESIDENTIAL DEVELOPMENT, Bristol Twp., BRISTOL, PA.

Joseph R. Farrell, Inc., 4424 Market St., Phila., Pa. CA $500,615, CHURCH and RECTORY, COLLINGDALE, PA. St. Joseph's R. C. Church, 1012 Bartram Ave., Collingsdale, Pa. Bids Sept. 16. CD 9/10.

Bucyrus-Erie Co., 1202 W. 12 St., Erie, Pa., Owner Builds, $800,000, 1 story, 45,000 sq. ft., steel frame ERECTION BLDG., ERIE, PA. H. K. Ferguson Co., 1783 E. 11 St., Cleveland, O., engr. CD 5/20.

▲ **Phillip Levin,** 104 W. 4 St., Plainfield, N. J., Separate Contracts, $1,000,000, 1 story, steel, brick, block 20-store SHOPPING CENTER, ERIE, PA. John S. Gifford & John Runds, 119 W. 8 St., Erie, archts.

▲ **H. T. Osborn Co., Inc.,** 631 12th St., Franklin, Pa. CA $1,594,807, 1 story, brick, block, steel WAREHOUSE-MACHINE SHOP, FRANKLIN, PA. Joy Mfg. Co., Oliver Bldg., Pittsburgh, Pa. Bids Sept. 27. CD 9/22.

Goodman & Bell, Inc., 725 N. 19 St., Allentown, Pa. CA Approx. $856,360, Junior HIGH SCHOOL, LANCASTER, PA. Lancaster Twp. School Bd., 415 N. Duke St., Lancaster, Pa. Bids Sept. 15. CD 9/9.

Guy Miller, Inc., 1618 Robinson's Blvd., Pittock, Pittsburgh, Pa., LB, $505,960. 4 story, steel, brick, block NURSES HOME and SCHOOL, McKEES ROCK, PA. Ohio Valley General Hospital, Heckle Rd., McKees Rocks, Pa. Bids Oct. 5. CD 9/22.

▲ **Catalytic Constr. Co.,** 1528 Walnut St., Phila., Pa. CA $9,000,000. design and constr. anhydrous ammonia PLANT, MARCUS HOOK, PA. Sun Oil Co., 1608 Walnut St., Phila., Pa.

▲ **Richard J. Seltzer,** 1422 Chestnut St., Phila., Pa. Separate Contracts. $1,000,000. RESIDENTIAL DEVELOPMENT, Paxon Hollow Rd., MEDIA, PA.

Alfred E. Greenbaum, 844 Montgomery Ave., Narberth, Pa. Separate Contracts. $775,000. RESIDENTIAL DEVELOPMENT, Margo Lane, NARBERTH, PA. Edward Geddes, 844 Montgomery Ave., Narberth, Pa., archt.

▲ **United Constr. Co.,** 1201 Lincoln Ave., Pittsburgh, Pa. LB $1,610,000. 7 story, 220x220 ft. steel, rein-con. parking GARAGE, Smithfield, Fourth and Diamond Sts.;

Ragnar Benson, Inc., 2 Gateway Center, Pittsburgh, Pa., LB $689,689. 7 story, steel, rein-con. parking GARAGE, Site C, PITTSBURGH, PA. Pittsburgh Public Parking Auth., 200 Ross St., Pittsburgh, Pa. Bids Sept. 30. CD 9/14.

▲ **Buchanan & Gingery,** c/o J. D'Epagnier, archt., 1004 Ripley St., Silver Spring, Md. Own Forces $18,000,000. 1,400 HOMES, at Hungerford Towne, ROCKVILLE, MD.

▲† **Standard Constr. Co.,** 1010 Vermont Ave., N.W., Wash., D. C., LB $16,306,000 Base Bid No. 1, LB $15,790,000 Base Bid No. 2;

George Hyman Constr. Co., 1010 Vermont Ave. N. W., Wash., D. C., LB, $14,140,000 Base Bid No. 3; Proj. 49-111, HOSPITAL CENTER at U. S. Soldiers Home Grounds, WASH., D. C. General Services Admin., General Service Bldg., 19 and F Sts. N.W., Wash. 25, D. C. Bids Oct. 12. CD 9/1.

SOUTH

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 5 Alabama
STREETS AND ROADS
October 26 North Carolina November 5 Alabama

BIDS ASKED—BUILDINGS

Ala., Montgomery—SCHOOL—BA 10/28—Montgomery Co. Bd. Educ., Montgomery, Bellingrath School addn. $400,000. Plans deposit $25. Pearson, Tittle & Narrows, First National Bank Bldg., archts. CD 8/30.

▲ **Fla., Arcadia**—WARD, etc.—BA 11/3—State Imprvt. Comn., Caldwell Bldg., Tallahassee, ward bldgs., duplex apartment's men's barracks, etc., Florida State Hospital. $1,000,000. Stefan H. Zachar, 1630 Lenox Ave., Miami Beach, archt. CD 9/8, under LB.

▲ **Tenn., Nashville**—STATE CAPITOL—BA 12/1—State of Tennessee, Nashville, remodel exterior State

Capitol, $1,500,000. Victor H. Stromquist, 1618 Church St., archt. CD 11/13.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲ **VIRGINIA**—State Hy. Dpt., 1221 E. Broad St., Richmond,
Diamond Constr. Co., P. O. Box 10007, Norfolk 13, Va. LB $4,847,527, Cont. No. 1, substructure;
Bethlehem Steel Co., Inc., 1305 Mercantile Trust Bldg., Baltimore 3, Md., LB $7,948,106, Cont. 2, superstructure, for 9,985 ft. bridge over Rappahannock River on Rte. 200 Grey's Point to Whitestone, Lancaster and Middlesex Counties. Parsons, Brinckerhoff, Hall & Macdonald, 51 Broadway, New York, N. Y., engrs. Bids Oct. 11. CD 8/6.

▲ **NORTH CAROLINA**—State Hy. & P. Wks. Comn., Raleigh,
Nello L. Teer Co., Durham, N. C., LB $107,298, est. $150,000-$175,000 hydraulic embankment, US 64, 0.9 mi. Proj. 1234, S-48 (2), Dare Co.;
E. P. Brinkley, 936 Cowper Dr., Raleigh, N. C., LB $105,482, est. $100,000-$125,000, bridge at Burgess Mill Creek, on 1.04 mi. US 264, 1530, F-706 (1).
Bowers Constr. Co., Box 1706, Raleigh, N. C., LB $513,788, est. $400,000-$500,000, bridge, approaches over Cape Fear River on 1.72 mi., Proj. 3-192, Balden Co.;
Rea Constr. Co., Box 2015, Charlotte, N. C., LB $118,369, est. $100,000-$125,000. structures 0.57 mi. NC 700, Proj. 5957, S-438 (2), Rockingham Co.;
John H. Brinkley, Thomasville, N. C. B $146,743, est. $150,000-$175,000, structures on 6.08 mi. Proj. 7820, F-17 (5), Wilkes Co.;
Columbus Constr., Whiteville, N. C., LB $80,080, est. $75,000-$100,000, two bridges and nine rein.-con. box culvert extens. US 70, Proj. BS 2-6-20-116, Lenoir Co.;
Dickerson, Inc., Box 448, Monroe, N. C., LB $63,129, est. $50,000-$75,000, widening bridge over Sigmon, Malden, Lockards and Carpenters Creek and Walkers Branch, US 321, Proj. No. BS 12-6-79-139, BS 12-6-83-141, Catawba and Lincoln Counties. Bids Oct. 12. CD 10/1.
▲† **E. B. Towles Constr. Co.**, Box 1617, Wilmington, N. C., CA, $1,513,000. utilities, Wilmington Ammunition Loading Terminal, ENG-31-075-55-9, WILMINGTON, N. C. U. S. Eng., 308 Customhouse, Wilmington, N. C. Bids Sept. 30.
▲ **GEORGIA**—State Hy. Dpt., Atlanta,
T. D. Lamb, Jr., Vidalia, Ga., LB, $67,486, 9.254 mi. Swainsboro-Canoochee Rd., Emanuel Co.; LB, $138,236, 16.603 mi. Douglas-Willacooche Rd., Coffee and Atkinson Counties;
D. W. Bailey, Jackson, Ga. LB, $70,402, 5.055 mi. Eastman-Chester Rd., Dodge Co.; LB, $80,716, 6.545 mi. Monticello-Forsyth Rd., Jasper Co.;
E. M. Beckman Constr. Co., Perry, Ga., LB, $100,444, 3.935 mi. and 1 bridge Wrightsville-Lovett Rd., Johnson Co.; LB, $80,696, 6.544 mi. Perry-Elko Rd. Houston Co.; LB, $87,751, 5.118 mi. Fitzgerald-Rebecca Road, Ben Hill and Turner Counties;
G. H. Law, Contractor, Gainesville, Ga., LB, $95,890, 8.306 mi. Warthen-Agricola Rd., Washington and Glascok Counties; LB, $72,891, 3.639 mi. Braselton-Jefferson Rd., Jackson Co.;
Georgia-Alabama Paving Co., Brookhaven Rd., Columbus, Ga., LB, $1,467,575, 37.395 mi. Homerville, Ga.-Lake City, Fla. Road, Echols and Clinch Counties; LB, $746,000, 15.33 mi. Swainsboro-Louisville Rd., Emanuel Co.;
W. T. Anderson, Thomson, LB, $124,980, 5.183 mi. and 1 bridge, Sparta-Mitchell Rd., Hancock Co.;
Ledbetter-Johnson Co., Rome, Ga., LB, $316,664, 7.845 mi. Calhoun-to-Ga. 61 Road, Gordon Co.;
Wright Constr. Co., 504 25 Ave., Columbus, Ga., LB, $548,826. 2.62 mi. and reconstr. Columbus-Manchester Rd., Muscogee Co.;
Coffee, Constr. Co., Eastman, Ga., LB, $128,676, 5.867 mi. Morgan-Shellman Road, Calhoun and Randolph Counties;
R. A. Bowen, Inc., Macon, Ga., LB, $61,594, 3.077 mi. Conyers-Walnut Grove Rd., Rockdale Co.;
J. F. Cleckley & Co., Orangeburg, S. C., LB, $1,047,908, 27.409 mi. Statesboro, Ga.-Allendale, S. C. Rd., Screven Co.;
Shepherd Constr. Co., 1800 Briarcliff Rd. N. E., Atlanta, Ga., LB, $428,711, 9.607 mi. Plains-Americus Rd., Sumter Co. Bids Oct. 8. CD 9/29.

BUILDINGS

LOW BIDS AND CONTRACTS

▲† **Virginia Engineering Co.**, 80 29th St., Newport News, Va., CA $1,713,303, four 3 story 263-man masonry, brick BARRACKS, FORT EUSTIS, VA. U. S. Eng., foot of Front St., Norfolk, Va. Bids Oct. 5, awarded Oct. 12. CD 10/11, under LB.
M. B. Kahn Constr. Co., 1113 Blossom St., Columbia, S. C. LB $837,286. Westwood SCHOOL, COLUMBIA, S. C. Bd. Trustees, City Public Schools, 1311 Marion St., Columbia, S. C. Bids Oct. 5. CD 9/14.
Sossamon Constr. Co., Gaffney, S. C., CA $402,602, Junior HIGH SCHOOL, GAFFNEY, S. C. Cherokee County School Dist., Gaffney, S. C. Bids Oct. 1. CD 10/13, under LB.
▲ **Daniel Constr. Co.**, P. O. Box 2286, Greenville, S. C. CA $1,500,000. men's DORMITORY and CLASSROOM BLDG., GREENVILLE, S. C. Furman University, Greenville, S. C. CD 4/8.
A. C. Samford, Inc., P.O. Box 1229, Albany, Ga., CA, $620,244, 4th and 5th floor addns. to HOSPITAL, SARASOTA, FLA. Sarasota Co., Court House, Sarasota, Fla. Bids Sept. 30.
▲ **Henry Shanedling Sons Corp.**, 1201 Turners Cross Rd. S., Minneapolis, Minn., CA, $5,000,000 (1) 400 RESIDENCES, CA, $3,000,000 (2) shopping center, TAMPA, FLA. Welburn Guernsey, 5020 Shore Crest Dr., Tampa, Fla.
▲ **Orange Constr. Co.**, 3825 Henderson Blvd., Tampa, Fla., Force Account, $4,500,000, 400 RESIDENCES, TAMPA, FLA. Richard Himes, 3637 Henderson Blvd., Tampa, Fla., archt.
▲ **Ford, Bacon & Davis Constr. Co.**, P. O. Box 1762, Monroe, La. CA Est. $5,000,000. nitroparaffin PLANT, STERLINGTON, LA. Commercial Solvents Corp., 260 Madison Ave., New York 16, N. Y. CD 1/28.
▲ **J. W. Bateson Co.**, Irwin-Keasler Bldg., Dallas, Tex. CA $1,938,800. HOUSING, Proj. Tenn. 4-6, CHATTANOOGA, TENN. Chattanooga Housing Auth., 1914 McCallie Ave., Chattanooga, Tenn. Bids Oct. 6. CD 10/13, under LB.
▲ **Batson-Cook Co.**, West Point, Ga., CA, $1,634,000. DEPARTMENT STORE, KNOXVILLE, TENN. Rich's, Inc., Forsyth St., Atlanta, Ga. Bids Sept. 28. CD 9/14.
▲ **G. E. Bass & Co.**, P.O. Box 1033, Jackson, Miss. CA $2,500,000. OFFICE, MEMPHIS, TENN. Marx & Sensdorf, Inc., 119 S. Court Ave., Memphis, Tenn. Hanker & Heyer, Commerce Title Bldg., Memphis, Tenn., archts.

MIDDLE WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 27 Michigan
STREETS AND ROADS
October 27 Michigan

▲ **Michigan**—AAA FACILITIES—BA 10/27—U. S. Eng., 1900 Cadillac Tower, Detroit, special AAA facilities Detroit Area, Franklin and 11 Mile Rd., Squirrel and Hamlin Rds. $1,750,000.

BIDS ASKED—BUILDINGS

▲ **Mich., East Lansing**—ANIMAL INDUSTRIES—BA 11/3—State, A. N. Langius, dir. State Bldg. Dpt., Lewis Cass Bldg., Lansing. animal industries bldg., Michigan State College, $4,000,000, O. J. Munson, 409 Wilson Bldg., Lansing, archt. CD 12/2.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

H. F. Juergens Co., 15430 Edgewater Dr., Lakewood 7, O. LB $565,680, est. $500,000. constr. and site clearing for pachyderm bldg., Cleveland Zoo, CLEVELAND, O. City, John J. Lucuoco, dir. Dpt. P. Properties, City Hall, Cleveland, O. Bids Sept. 30. CD 9/9.
Schafer Constr. Co., Caxton Bldg., Cleveland 15, O. CA $80,191, incinerator bldg.;
Pittsburgh-Des Moines Steel Co., 21000 Brookpark Rd., Cleveland, O., CA $74,530, furnace for cement block incinerator, Monticello Blvd. and Green Rd., SOUTH EUCLID, O. City, 1349 Green Rd., South Euclid 21, O. Bids Oct. 6, awarded Oct. 11. CD 9/22.

▲ **ILLINOIS**—State Div. Hys., Springfield,
M. J. Boyle & Co., 2480 N. Elston St., Chicago, Ill., LB, $1,141,037, c. conc. 0.51 mi. Congress St. Expressway from Damen Ave. easterly to Ashland Ave. in Chicago, Cook Co. Bids Oct. 8. CD 9/29.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **Jennings & Churella**, New London, O., LB $1,260,000, men's DORMITORY and women's DORMITORY, OBERLIN, O. Oberlin College, Oberlin, O. Bids Oct. 7. CD 10/5.
▲ **Summer C. Sollitt**, 307 N. Michigan Ave., Chicago 1, Ill., CA, $1,100,000. research LABORATORY, BARRINGTON, ILL. Quaker Oats Co., Merchandise Mart, Chicago 54, Ill. Bids Sept. 28. CD 9/16.
J. Emil Anderson & Son, 1809 Balmoral Ave., Chicago 40, Ill. CA, $500,000. design and construct 40,000 sq. ft., regional OFFICE, PARK RIDGE, ILL. General Mills, Inc., 203 S. La Salle St., Chicago, Ill. CD 9/9.
▲ **O. W. Burke Co.**, 1032 Fisher Bldg., Detroit, Mich. CA Est. $1,200,000. 7 story, brick, steel BREWERY STORAGE, FERMENTING PLANT addn., Gratiot St., DETROIT, MICH. Stroh Brewing Co., 991 Gratiot St., Detroit, Mich.
Whitehills Estates, Albert A. White, M-78 and Alton Rd., East Lansing, Mich. Owner Builds. Est. $850,000. 75 single HOUSES, 45 acre development, EAST LANSING, MICH.
Wallace Constr. Co., Farmington, Mich. CA $934,535. 3 elementary SCHOOLS, Gill Rd., Middlebelt Rd. and Shiawasee Rd., FARMINGTON, MICH. Farmington Twp. School Dist., Farmington, Mich. CD 10/5, under LB.
▲ **Castell Realty**, (agent), 1601 E. 11 Mile Rd., Royal Oak, Mich. Owner Builds. $2,300,000. 200 brick ranch HOMES, Merriman and Joy Rd., LIVONIA, MICH.

WEST OF MISSISSIPPI

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
October 28 South Dakota
November 14 Minnesota & Wisconsin
STREETS AND ROADS
October 26 Kansas October 28 South Dakota

† **Ark., Jacksonville**—QUARTERS—BA 11/9—U. S. Eng., P.O. Box 867, Little Rock, bachelor officers quarters Little Rock Air Force Base, ENG-03-050-55-36. $500,000-$1,000,000. Extended date. CD 10/14.

BIDS ASKED—BUILDINGS

▲ **Tex., Victoria**—HOSPITAL—BA 11/16—Victoria Co., Court House, 4 story, bsmnt., 100-bed, steel, brick and stone county hospital. $1,750,000. Plans deposit $50. Blum & Guerrero, 4930 Maple St., Dallas, and Walter P. Moore, 2 Pinedale St., Houston, archts. Jordan S. Ault & Robert Rick, 804 E. Goodwin St., Victoria, and O'Connell & Probst, 504 W. 7th St., Austin, engrs. CD 3/12.
▲ **Tex., Houston**—SHOPPING CENTER—Bids Asked—Lupton & Arnold Realty Co., 4207 Byron St., retail shopping center, Jensen Dr. $375,000; Proj. 1, 80,000 sq. ft. masonry shopping center off North Loop. $750,000. Harvin C. Moore, 2006 W. Alabama St., archt. CD 9/17.

SOON LETS CONTRACT—BUILDINGS

▲ **Neb., Elkhorn**—SEMINARY—Benedictine Fathers, Inc., c/o Steele, Sandham & Steele, archts., Electric Bldg., Omaha, soon lets contract seminary and chapel, incl. bldgs., roads, utilities, etc. $1,000,000. CD 2/26/53.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

J. E. Pyle Constr. Co., 400 E. McDaniel St., Springfield, Mo. CA $526,051. high SCHOOL addn., Northwest Grade SCHOOL addn., MARSHALL, MO. Bd. Educ., Marshall, Mo. Marshall & Brown, 1016 Baltimore St., Kansas City, Mo., archts. Bids Sept. 30. CD 2/25.
▲ **Morrison-Knudsen Co., Inc. & Utah Constr. Co.**, 319 Broadway, Boise, Idaho. CA $24,438,742, est. $27,995,187. constr. Table Rock Dam, near Branson, Stone and Taney Counties, Mo. on White River, CIVENG-03-050-55-1, MISSOURI AND ARKANSAS. U. S. Eng., P. O. Box 867, Little Rock, Ark. CD 10/8, under LB.
▲ **First Presbyterian Church**, 1011 N. Robinson St., Oklahoma City, Okla. rejected bids Sept. 27. CHURCH, N.W. 25 and Western Ave., OKLAHOMA CITY, OKLA. LB $1,336,000. CD 10/12, under LB.
▲† **Robert E. McKee, General Contractor, Inc.**, Box 562, El Paso, Tex., CA $1,677,601, five dormitories and three dining halls, Abilene Air Force Base, Inv. No. ENG-41-443-55-5, ABILENE, TEX. U. S. Eng., 100 W. Vicker St., Fort Worth, Tex. Bids Sept. 30. CD 10/6, under LB.
▲† **Farnsworth & Chambers Co. Inc.**, Box 74, Houston, Tex., CA $6,496,068. general contract hospital, Inv. No. ENG-41-243-55-1, LACKLAND AIR FORCE BASE, TEX. U. S. Eng., Box 1229, Galveston, Tex. Bids Sept. 16. CD 9/22, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

▲ **O. E. Madsen Co.**, 492 Sexton Bldg., Minneapolis, Minn. CA $1,028,000. general contract HIGH SCHOOL, FAIRMONT, MINN. Bd. Educ., M. Beech, clk., Fairmont, Minn. Bids Sept. 23. CD 8/24.
▲ **Linbeck Constr. Co.**, Box 13007, Houston, Tex., CA $1,000,000, Marion HIGH SCHOOL, HOUSTON, TEX. Sisters of Incarnate Word, Post Oak and Richmond Sts., Houston, Tex. CD 5/4.
▲ **Thad Dederick**, P.O. Box 13067, Houston, Tex., CA $2,101,626. U.S. Proj. Tex. 127, 5 story, bsmnt. 85,000 sq. ft. 150-160-bed brick, concrete frame HOSPITAL, ORANGE, TEX. Orange Co., c/o Comrs. Court, Orange, Tex. Bids Sept. 29. CD 10/4, under LB.
N. A. Nelson Constr. Co., New Castle, Wyo., CA, $409,900 CITY HALL and FIRE STATION, NEW CASTLE, WYO. City, City Hall, New Castle, Wyo. Staven Eng. Co., 623½ St. Joe St., Rapid City, S. D., engrs. Bids Sept. 14.

FAR WEST

BIDS ASKED—HEAVY CONSTRUCTION
STATE HIGHWAY LETTINGS
BRIDGES
November 3 California
STREETS AND ROADS
November 3 California

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

† **WASHINGTON**—Bureau P. Rds., Dpt. Commerce, Morgan Bldg., Portland, Ore.,
H. Govan, P.O. Box 308, Port Angeles, Wash., CA, $893,180 grading 6.9 mi. Heart o' the Hills Hy., Clallam Co. Bids Oct. 1. CD 10/6, under LB.
▲ **Vinnell Co., Inc.**, 1145 Westminster Ave., Alhambra, Calif., LB, $2,393,355, Proj. 131, Northeast Storm Drain, LOS ANGELES, CALIF. Los Angeles County Flood Control Dist. 2250 Alcazar St., Los Angeles, Calif. Bids Oct. 8. CD 9/9.
▲ **E. A. Irish**, 2944 Gleneden St., Los Angeles, Calif., **Johnson-Western Constructors**, 2100 Wilmington-San Pedro Rd., San Pedro, Calif., and **Clyde Woods Sons, Inc.**, 6900 Tujunga Ave., North Hollywood, Calif., CA $3,269,745 Project No. 1, East Compton Creek No. 1 storm drain Bell, Huntington Park, Maywood, South Gate and Vernon, LOS ANGELES, CALIF. Los Angeles County Flood Control District, 2250 Alcazar St., Los Angeles, Calif. Bids Sept. 24, awarded Oct. 5. CD 9/30, under LB.

▲ **Lindgren & Swinerton,** 200 Bush St., San Francisco, Calif., CA **$1,186,800,** jet overhaul SHOP, Norton Air Force Base, ENG-04-175-55-6, SAN BERNARDINO, CALIF. U. S. Eng., 751 S. Figuero St., Los Angeles, Calif. Bids Sept. 17, awarded Oct. 4. CD 9/29, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

McDonald Bros., 2620 W. Rosemead Blvd., El Monte, Calif., CA **$972,600.** 118 frame, stucco DWELLINGS, Duel St. and Oakbank Dr., AZUSA, CALIF. Azusa Highlands, Inc., Box 111, El Monte, Calif.

▲ **Crown Constr. Co.,** 1231 S. La Brea Ave., Los Angeles, Calif., LB **$1,037,627,** Arrow High SCHOOL, EL MONTE, CALIF. El Monte Union High School District, 630 S. Tyler Ave., El Monte, Calif. Bids Oct. 5. CD 9/23.

▲ **Nels E. Carlson & Son,** 1327 E. 36 St., Oakland, Calif., CA **$1,000,000.** 80 HOMES, Orinda Oaks Subdivision, ORINDA, CALIF. H & J Co., 2901 Mt. Diablo Blvd., Walnut Creek, Calif. Awarded Oct. 5.

▲ **Offcco Constr. Co., Inc.,** 2650 Cherry Ave., Long Beach, Calif., LB, **$1,234,711,** furnishing, erecting steam generator at Broadway Steam Plant, Unit No. 2, PASADENA, CALIF. City Light & Power Dpt., 100 N. Garfield St., Pasadena, Calif. Bids Oct. 7.

▲ **New West Associates, Inc.,** 1921 Stockton Blvd., Sacramento, Calif., CA **$1,500,000,** 144 HOMES, at Fruitridge Terrace Development, SACRAMENTO, CALIF. Fruitridge Developers, Inc., 1921 Stockton Blvd., Sacramento, Calif. Spore, White & Van Doren, 2950 23 St., Sacramento, Calif., archts. Awarded Oct. 1.

CANADA

LOW BIDS AND CONTRACTS

▲ **Ont., Toronto**—PLANT, etc.—Bids Asked—Ayer Storage Ltd., 690 St. Paul St. W., Montreal, Que., storage plant and office, The Queensway and Plywood Pl. $1,750,000. D. N. McIntosh, 36 James St. S., Hamilton, archt.

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

C. A. Pitts General Contractors Ltd., 30 Commercial Rd., Leaside, Ont., CA, **$588,870,** filtration plant addn. Scarborough, Kingston Rd., TORONTO, ONT. Municipality of Metropolitan Toronto, 67 Adelaide St. E., Toronto, Ont. Bids Oct. 4. CD 10/12, under LB.

BUILDINGS

LOW BIDS AND CONTRACTS

Roland Chalifoux, 6275 Papineau Ave., Montreal, Que., CA, **$600,000,** steel, stone concrete, brick COLLEGE, LONGUEUIL, QUE. Classical College Bd. 945 Chambly Rd., Longueuil, Que. Roger Chalifoux, 6275 Papineau Ave., Montreal, Que., archt. CD 5/10.

J. S. Hewson Ltd., 4424 St. Catherine St. W., Montreal, Que. CA, **$805,829,** BANK and OFFICES, Queen Mary Rd. and Decarie Blvd., MONTREAL, QUE. Royal Bank of Canada, 360 St. James St. W., Montreal, Que. J. Klassen, 231 Carling Ave., Ottawa, Ont., engr. CD 4/26.

J. L. Guay & Freres Ltee, 6000 Cote des Neiges Rd., Montreal, Que., CA, **$850,000.** ORPHANAGE, Belanger St. between 31 and 36 Aves., ROSEMOUNT, QUE. Orphelinat Itallen St. Joseph, 1205 St. Andre St. Rosemount, Que. G. Ganier, 1449 Crescent St., Montreal, Que., archt. CD 8/2/51.

Adco Construction Co., Ltd., 437 St. James St., Montreal, Que. Owner Builds, **$870,000.** 60 BUNGALOWS, Churchill Ave., VILLE LA SALLE, QUE.

ALASKA

HEAVY CONSTRUCTION

LOW BIDS AND CONTRACTS

▲† **Peter Kiewit Sons' Co.,** 1300 Aloha St., Seattle, Wash., CA **$1,353,170,** steel pipe water distr. sys., FAIRBANKS, ALASKA. Alaska P. Wks., Dpt. Interior, Juneau. Bids Aug. 25. CD 9/9, under LB.

AMERICANS ABROAD

BIDS ASKED—HEAVY CONSTRUCTION

Bids are being taken on the following projects, under recently announced International competitive bidding of NATO.

FRANCE

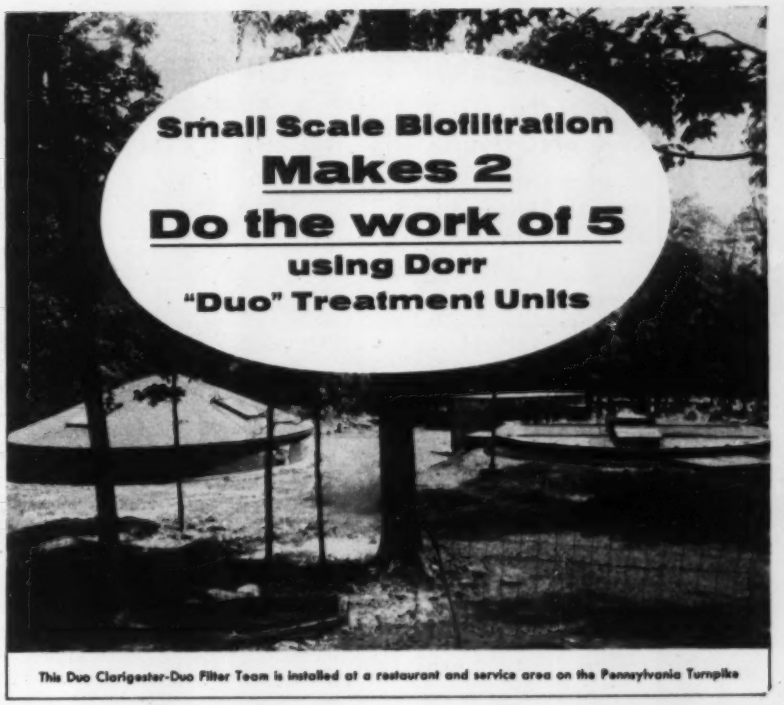
Service D'Infrastructure de L'Air, 26 Blvd., Victor, Paris.

constr. three hangars at the airfields of Chalons-Vatry, Brienne-Le-Chateau and Chenevieres. Firms should report their interest before November 1. For information on bidding NATO projects see 6/25 Construction Daily.

BIDS ASKED—BUILDINGS

† **Cuba, Guantanamo Bay**—HOSPITAL—BA 11/23—P. Wks. Office, Tenth Naval Dist., San Juan, Puerto Rico, 2 story, penthouse, 38x226 ft., 84x210 ft., 29x168 ft. rein.-con. frame hospital; 2 story, 32x115 ft. corpsmen's barracks; 1 story, 38x110 ft. nurses quarters; 1 story, 25x162 ft. garage, U. S. Naval Hospital, U. S. Naval Base, Spec. 41370, Plans deposit $100. CD 2/19.

(Proposal Advertisements see pp. 71 to 74)



This Duo Clarigester-Duo Filter Team is installed at a restaurant and service area on the Pennsylvania Turnpike

Here's an actual case history that speaks for itself. Complete treatment including sludge digestion was required for a population equivalent of 3000. The consulting engineer designed two alternate plants . . . one using conventional equipment and one using Dorr "Duo" units. This is the breakdown:

ALTERNATE #1	ALTERNATE #2
One 30' dia. Duo Clarigester	Two 22' dia. Clarifiers
One 38' dia. Duo Filter	Two 27' dia. Filters
	One 30' dia. Digester
TOTAL — 2 UNITS	TOTAL — 5 UNITS

And don't forget — both plants were designed for the *same* flow, to provide the *same* degree of treatment. Obviously, Alternate #1 was selected for the job on a lower first cost basis. Plus factors were substantial savings in space and the simplified operation inherent in Clarigester design.

The Dorr Duo Clarigester and Duo Filter are ideal equipment combinations to treat domestic and industrial wastes from population equivalents up to 5000. Skilled operators are not required, and over and underloads will not upset the balance. We'd like to send you more information on these cost-cutting units. Write for Bulletin No. 7313 to The Dorr Company, Stamford, Connecticut.

Clarigester is a trademark of The Dorr Company, Reg. U. S. Pat. Off.

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STAKES

HIGH GRADE HARDWOOD

Stained Yellow Bound with Steel Strapping

		In 1000 Per 100	Lots Per 100
1¾"x1¾"–	12"	$7.85	$7.15
	15"	9.85	8.95
	18"	11.50	10.50
	24"	16.00	14.50
	30"	24.00	22.50
¾"x1¾"–	12"	6.15	5.60
	15"	6.60	6.00
	18"	7.50	6.50
	24"	11.00	10.00
	30"	16.00	14.00

Prices net F.O.B. Cumberland, Md.

BUCHANAN LUMBER CO.
CUMBERLAND, MD.

LIGHTWEIGHT RL

Page

CLEARING POST OFFICE CHICAGO 38, ILL.

AUTOMATIC DRAGLINE BUCKETS

COMMENT
from the
BUTLER ENGINEER

. . . of orchids to the Corps of Engineers . . . and automation

A very forward-looking and alert Corps of Engineers has kept the desk lights burning for many weary nights to bring forth definite and definitive spec's covering the production of Ready Mixed Concrete. This move, greatly needed, is of vast importance to the Ready Mixed Industry for it provides absolute clarification of what kind of plant or what kind of job as a basis for bidding on civilian or military work supervised by the Corps.

Automation of Ready Mixed plants is going to be required in certain contract classifications. Your Butler Engineer promises that Butler Bin will help you meet the new specifications by revising your existing plant . . . and by engineering new plants to the requirements.

At any rate, orchids and a sweeping bow to the Corps.

Speaking of plant automation, and this applies to Road Builders as well as Ready Mixed plant owners, I often wonder what your batch operator thinks when he goes home with protesting muscles, aching back and tired mind and, over the suds (soap, of course) contemplates what is provided his wife in her household work. Consider: automatic dishwasher, automatic heating, automatic toaster, automatic refrigerator defrosting, automatic cooking, automatic water heater, even automatic music to wake up. And he drives a car with automatic shift and automatic dimmers on the lights.

The moral? Plant automation pays . . . in higher production . . . better quality . . . greater profits . . . happier owners . . . happier operators . . . happier customers.

Yours — automatically,

The Butler Engineer

BUTLER BIN COMPANY
WAUKESHA, WISCONSIN

UNIT PRICES

Hydraulic fill for Louisiana levee

Lake Pontchartrain Protection Levee, in Jefferson Parish, La., is being enlarged by 680,000 cu yd of hydraulic fill. Jahncke Services, Inc., New Orleans, La., bid a low $0.5444 per cu yd and was awarded the $370,192 contract by U. S. Corps of Engineers.

This project increases by 3 ft the existing embankment to 5 ft in depth over a width varying from 190 to 220 ft, and a length of 3.5 miles.

Retaining dikes are being constructed and hydraulic fill pumped into the embankment, from material procured from pits located about one-half mile offshore.

Lake Pontchartrain is a shallow body of water, which becomes rough with increases in wind velocity. The pipeline from the dredge pit to the shore line is sunk to the bottom of the lake, and so used. During rough water conditions the dredge unhooks from the submerged line and moves into a sheltered harbor. The dredge has a ladder extension to provide a total ladder length of 85 ft. Excavation goes to 60 ft below mean sea level in order to utilize Pleistocene clay.

Work started April 20, 1954 and is to be completed by November 20.

Heavy construction laborers in the New Orleans area receive a minimum of $1.37 per hour.

Bids opened March 30 give these unit prices:

	680,000 cy per cy
1C Jahnke Service, Inc., New Orleans, La	$0.5444
2 Bauer-Smith Dredging Co., Port Lavaca, Tex	0.5650
3 McWilliams Dredging Co., New Orleans, La	0.5793
EE U. S. Corps of Engineers, New Orleans District (without profit)	0.5340

Village waterworks, Minn.

The village of Plato, Minnesota, is spending $5,000 less than it expected to on a $59,000 waterworks project, thanks to close competition among bidders.

Juul Contracting Co.'s $30,509 base bid for the distribution system with standard-joint cast iron pipe was lowest of seven, 1% under second. Their $27,746 bid for the roll-on-joint cast iron pipe alternate was another 9% less, and got the contract.

James A. Lindsey of Hutchinson, Minn., is consulting engineer. An unusual feature of the project is a 6½-ft cover over pipes for frost protection.

Wage rates give approximately $2.25 per hour to skilled, $1.50 to semiskilled, $1.00 to common labor.

Total cost of the waterworks is broken down as follows:

Item	Cost	% of total
12" screened well	$1,929	3.3
Distribution system (1C)	27,746	47.1
House connections	3,475	5.9
Pumphouse (by village) est.	1,200	2.0
10-hp pump, meter, valves & fittings	2,146	3.6
50,000 galv stl double ellipsoidal tank & tower	21,000	35.6
Footings & valve pit (by village) est.	1,500	2.5
	$58,996	100.0

Bidders on the distribution system include:

1C	Juul Contg. Co., Hutchinson, Minn.	$27,746
*1	Juul Contg. Co., Hutchinson, Minn.	30,509
*2	M. J. Jacobs & Sons, Bird Island, Minn.	30,894
*7	Troumbly Bros., Taconite, Minn.	38,956

Bids: 8-23-54 Item	Unit	Quantity	Unit Prices 1 & 1C	2
CIP w roll-on joint				
Item				
6"	lf	8,130	$2.32	No bid
6" leads	lf	228	2.32	No bid
8"	lf	385	3.09	No bid
CIP 8"	lf	18	3.75	5.00
10"	lf	54	4.00	6.00
6x6" cross	ea	12	40.00	49.00
Tee 6x6"	ea	24	32.00	35.00
6x8"	ea	2	45.00	51.00
8x8"	ea	1	50.00	55.00
Plug 6"	ea	24	5.00	7.00
8"	ea	1	7.50	10.00
Manole w 6" gate vlv**	ea	17	180.00	86.00
Gate vlv w CI box instead of MH	ea	17	85.00	90.00
Hydrants 6"	ea	21	182.00	190.00
RR crossing	ea	2	50.00	170.00
CIP alternate**				
6"	lf	8,130	$2.45	$2.57
6" leads	lf	228	2.45	3.00
8"	lf	385	3.25	3.50
ACP alternate**				
6"	lf	7,750	No bid	2.17
6" leads	lf	228	No bid	3.00
8"	lf	385	No bid	2.90

* Base bid
** This alternate not selected

Minn. dam replacement

Intrusion-Prepakt, Inc., Cleveland, Ohio, bid low at $167,190, 9% under second, to remove 100 ft of Boule Dam at Locks and Dam No. 2, Hastings, Minn. and replace with a concrete gravity section.

Intrusion-Prepakt concrete will be used in lower pours. Intrusion grout will be pumped from work area about 300 ft across two lock chambers to site of work. The existing Boule structure will be utilized for upper arm cofferdam. Completion time is 130 days. Bidders include:

1C	Intrusion-Prepakt, Inc., Cleveland, Ohio	$167,190
2	Brennan Bros., La Crosse, Wis.	182,838
5	Kraus-Anderson of St. Paul Co., St. Paul, Minn.	270,885
EE	U. S. Corps of Engineers, St. Paul District	190,679

Bids: 9-23-54 Item	Unit	Quantity	Unit Prices 1C	2
Sand fill for Boule pier	ls	1	$9,400	$9,922
Cofferdam	ls	1	30,000	32,170
Prep work for conc	ls	1	6,500	4,362
Rem exist structures	ls	1	7,800	2,850
Cmt in usual conc	bbl	680	6.60	7.00
Usual concrete	cy	557	61.00	57.00
Prepakt conc	cy	1,340	44.00	55.00
cement	bbl	750	6.60	7.00
minrl fillr	bbl	750	2.70	7.00
Steel reinf	lb	4,400	0.25	0.20
Rubber waterstops	lf	65	6.00	7.00
Foot bridge	ls	1	5,800	93.50
Beam suppt for pier wall	ls	1	1,800	1,440

Photo by Dwight Boyer, shown through courtesy of Toledo Blade and with permission of Gulf Oil Corp.

Raymond BUILDS

MORE FOUNDATIONS FOR GULF OIL

THE GULF OIL CORPORATION recently used Raymond for the foundation work of a multimillion-dollar expansion program at its Toledo Refinery. In just 127 working days Raymond completed its part in the project, driving 115,000 linear feet of pipe step-taper and composite piles—another example of how Raymond efficiency saves time . . . and money.

RAYMOND'S DOMESTIC SERVICES
Soil Investigations . . . Foundation Construction
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RAYMOND'S SERVICE ABROAD
In addition to the above, all types of General Construction.

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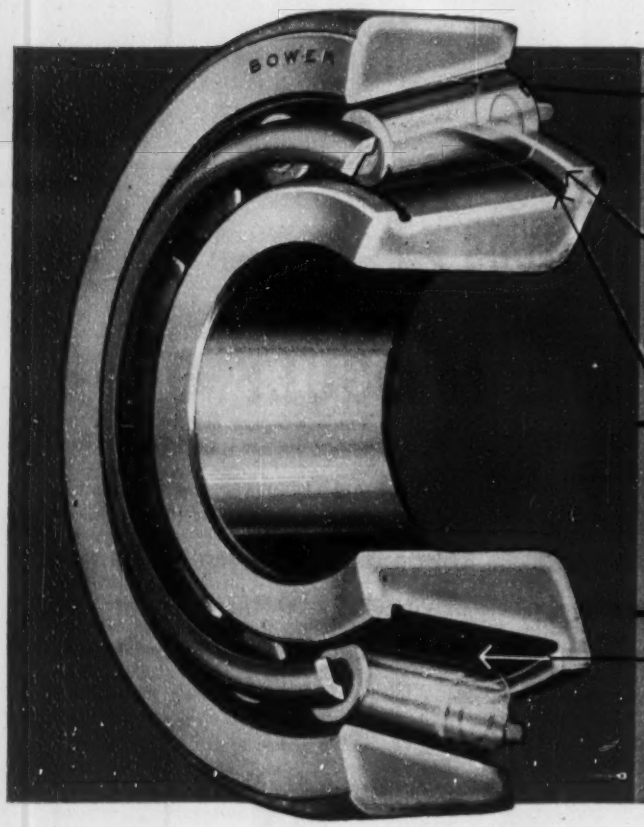
Here's how BOWER Spher-o-honed design lengthens bearing life... cuts maintenance costs!

The Bower tapered roller bearing design features shown on this page are vitally important to every bearing user. For they illustrate the high quality, precision workmanship and close attention to engineering detail that go into *every* Bower bearing. Even more important, these Bower design features will give you significant bearing advantages such as reduced wear, longer bearing life and lower maintenance requirements. They've been thoroughly *proved* by extensive use in virtually every type of bearing application. If your product uses bearings—whatever it may be—specify Bower now. Or better yet, call in a Bower engineer while your product is still in the blueprint stage.

BOWER ROLLER BEARING COMPANY • DETROIT 14, MICHIGAN



● **SPHERICAL ROLLER HEADS ARE GENERATED TO THE CONTOUR THEY ACQUIRE IN THE COURSE OF WEAR.** This helps Bower bearings hold adjustment and pre-load longer and better. Normal running-in time is virtually eliminated.

● **HIGHER FLANGE PROVIDES A LARGE, TWO-ZONE CONTACT FOR ROLLER HEADS,** thereby reducing unit pressure. This exclusive Bower feature improves roller alignment, greatly reduces wear and practically eliminates resultant "end play."

● **LARGER OIL GROOVE GIVES POSITIVE LUBRICATION** at the critical point—where the roller head thrusts itself against the cone flange. Here Bower design provides a larger recess that holds a generous supply of lubricant—increasing efficiency and decreasing wear.

● **PRECISION RACES PROVIDE QUIETER, SMOOTHER OPERATION.** A Bower-developed grinding and honing process provides a micro-smooth surface of hard, crystalline base metal. In this way, close-tolerance precision is built-in to stay! No final adjustment is needed!

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BOWER

ROLLER BEARINGS

SPHERO-HONED

Natural gas: still whooshing up new pipelines

AGA head predicts gas industry will spend $3½ billion in four years, nearly all for natural gas

The amazing postwar expansion of natural gas facilities has not ended yet, by any means. U.S. gas utilities and pipeline companies will spend over $3.5 billion in the next four years to expand their facilities. About 90% of this will go into natural gas systems. Up in Canada, where huge new reserves have been discovered, natural gas expansion is just starting.

That is the picture presented to gas utility and pipeline men who attended the annual convention of the American Gas Assn., in Atlantic City, N. J., last week. The spokesman was Earl H. Eacker, outgoing president of the association and president of Boston Consolidated Gas Co.

• **New fields to conquer**—Eacker pointed out that natural gas is still finding new areas in the U.S. where it is competitive with other forms of heat and power. The industry already has increased its assets by nearly $7 billion since World War II, and is now almost double its 1945 size. And he noted that there's no sign yet that expanding use of natural gas will outrun reserves. Though a record 9 trillion cu ft of natural gas was produced in 1953, proved reserves mounted during the year from 200 trillion to 212 trillion.

The table (opposite) shows the larger natural gas pipeline projects recently listed by the Oil & Gas Journal for which contracts had not yet been awarded. Some of these projects are still in the early planning stage, but others already have been approved by the Federal Power Commission. The list indicates that somewhere around $500 million of natural gas pipeline contracts are now in sight—and plenty more are coming.

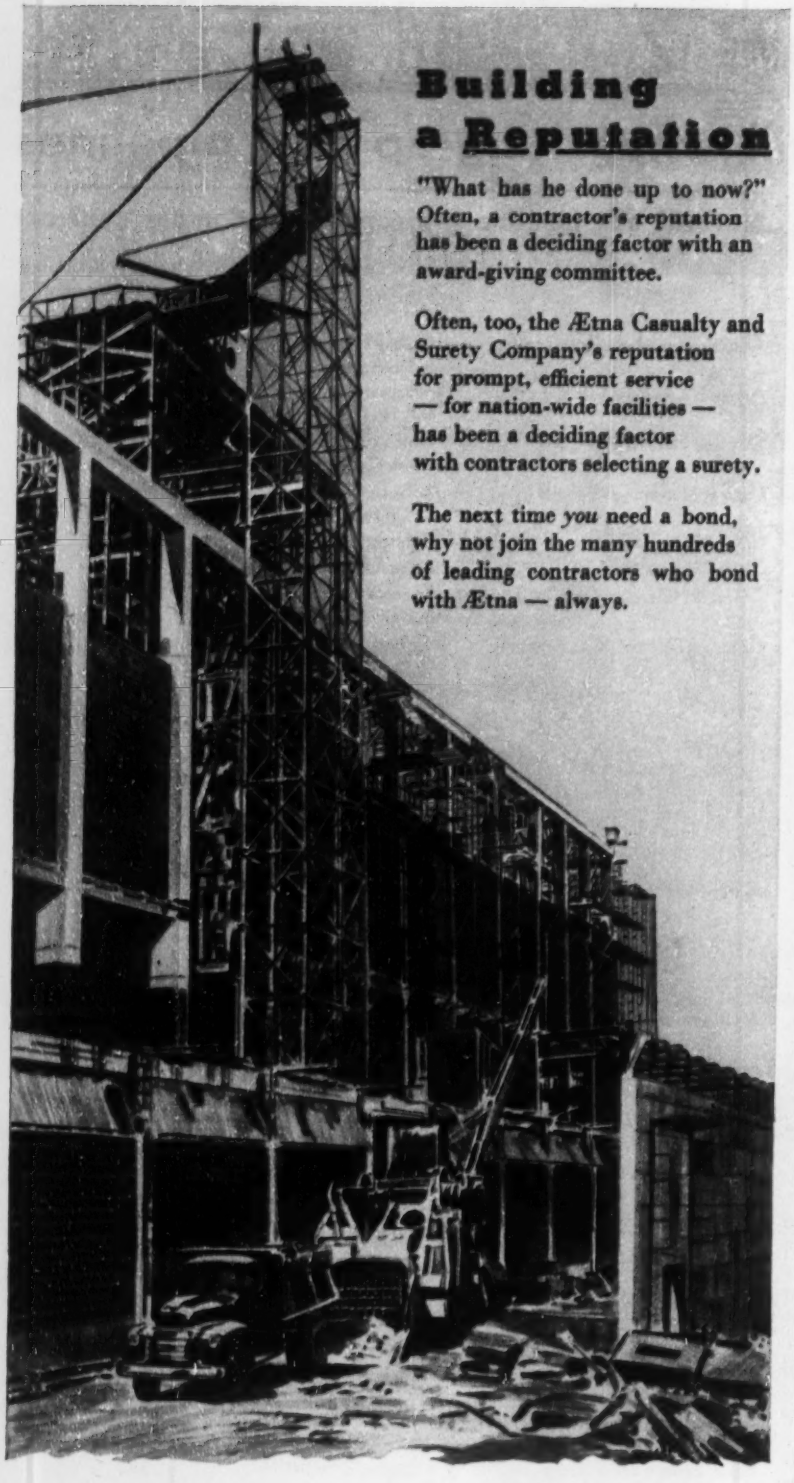
Eacker told the AGA meeting that the industry has 49 research projects under way to provide better gas appliances and service and to improve production, transmission, distribution, and use of gas. There are now, he said, over 27 million gas customers. And he predicts that by 1957 sales will have increased 31.5% over the 1953 level.

(B&F continued on page 64)

Natural gas pipeline projects not yet under contract

Owner	Location	Miles	Estimated cost (millions)
American-Louisiana Pipe Line Co....	Acadia Parish, La. to Detroit area	1,121	$130.0
Arkansas Louisiana Gas Co.....	Arkansas, Louisiana, and Texas	136	9.2
Carolina Natural Gas Corp.....	North Carolina and South Carolina	185	...
Central Hudson G&E Corp.....	Albany, N. Y. to Kingston, N. Y.	48	...
City of Dalton, Ga.....	Connecting Line	39	2.9
City of Fayette, Ala.....	Connecting Line	20	...
Colorado Interstate Gas Co.....	Green River, Wyo. to Denver, Colo.	365	...
Colorado-Western Pipe Line.....	Cortez, Colo. to Denver, Colo.	708	30.0+
	La Plata County, Col. to Pueblo, Colorado Springs, and Denver	328	21.6
Houston Texas Gas & Oil Co.....	Lower Rio Grande Valley to Chicago	...	...
	Southern Louisiana to New York City	...	...
	Louisiana to Florida	...	...
Kansas-Nebraska Natural Gas Co....	Additions to Nebraska System	206	...
Mfgrs. Gas, Light & Heat Co.....	Additions in Ohio, Pennsylvania, and West Virginia	253	...
Michigan Wisconsin Pipe Line Co...	Additions in Wisconsin and Michigan	251	...
Missouri Public Service Co.....	New Franklin, Mo. to Trenton, Mo.	136	...
Montana-Dakota Utilities Co.....	Montana, North Dakota, South Dakota, Wyoming	90	...
Natural Gas Producer, Inc.....	Yenter Pool, Colorado, to Denver	100	...
North Dakota Gas Trans. Co.....	Tioga, N. D. and Beaver Lodge Field to Fargo and Grand Forks, N. D.	470	...
Ohio Fuel Gas Co.....	Connecting Lines	360	...
Pacific Northwest Pipeline Corp....	Ignacio, Colo. to Bellingham, Wash.	1,466	...
Pine Tree Natural Gas Co.....	Boston Area to Bangor, Me.	204	...
South Georgia Nat. Gas Co.....	Phoenix, Ala. to Tallahassee, Fla.	368	9.0
Texas Eastern Trans. Corp.....	Kosciusko, Miss. to Beaumont, Texas	382	...
	Joaquin, Texas to Longview, Texas	58	...
Transcontinental Gas P. L. Corp.....	Loops on present Texas-New York line	421	...
	Additional lines	101	8.5
Virginia Natural Gas Co.....	Buckingham, Va. to Richmond and Portsmouth, Va.	153	...

Source: Oil & Gas Journal


Building
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"What has he done up to now?" Often, a contractor's reputation has been a deciding factor with an award-giving committee.
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HARTFORD 15, CONNECTICUT

THE HOUSING PICTURE

Roy Wenzlick, the St. Louis economist who is generally considered the leading U. S. expert on real estate trends, has been worried about the current high rate of homebuilding. He feels that the long postwar rise in size of family has blinded builders to the fact that new families are not being formed now in such large numbers as they were after the war. The reason for this, of course, is the relatively low number of babies born during the depression-ridden 1930s. These children have now grown up and have started to form families of their own.

• **How long?**—How much longer, worries Wenzlick, will builders continue to find an active market for over a million new homes a year? He has developed a way of gaging the demand and supply of housing, by counting "For Rent" and "Wanted to Rent" ads over the 1940-1954 period in a number of the nation's leading newspapers.

Wenzlick finds that since the end of World War II there has been a steady gain in the number of "For Rent" ads, and a corresponding decline in "Wanted to Rent" ads. That's the national pattern; of course, the situation varies somewhat in different cities.

• **Rental surplus**—In other words, a lot more rental units are available than a few years ago. Since these units compete with new homes for the housing dollar, Wenzlick feels that the large supply may have some effect on building of new homes. However, he also points out that 86% of the available rental units are furnished or unfurnished apartments. Only 14% of them are furnished or unfurnished houses. Back in 1940, 24% of the rental units offered were houses.

It's quite possible that we could have a large supply of rental apartments and still continue to build more than one million homes each year. Many of these "For Rent" apartments are in the wrong locations to attract occupants.

More people want their own homes these days—and they want them in the suburbs, not in big cities. Furthermore, the liberal credit terms allowed by the federal government on mortgages which it guarantees, plus the ease of the mortgage market, make

home ownership a lot easier than it used to be in the days of big down payments.

• **Used-house prices**—The factor that could cut deeply into homebuilding, however, would be a sharp decline in prices of "used" houses. That would make these homes more competitive as against new ones with all the latest conveniences, and would make it difficult for home owners who wish to sell their present dwellings to buy bigger ones.

Prices of older homes have been declining gradually for several years now. It remains to be seen whether they will decline far enough—or sharply enough—to have a major effect on the homebuilding boom.

Voters have big bond list to look over this Nov. 2

Voters will pass on about $1.5 billion in bond issues on Nov. 2, according to the latest compilation issued by the BOND BUYER. This is about $570 million above the total submitted to voters last Election Day, when $850 million of bonds were approved and $76 million defeated. The volume this year also will be about $100 million below the record volume of 1949, when $1,607 million in bonds were submitted to voters and $1,342 million approved.

Here's the list of major issues:

$550 million—New York State—mental hospitals and slum clearance

$275 million—California—veterans' loan and schools

$80 million—Michigan veterans' bonus

$54.6 million—Philadelphia

$50 million—Louisiana—highway construction and maintenance

$39.9 million—Cleveland

$32.5 million—Long Beach (Calif.) School District

$25.3 million—Los Angeles County, Calif.

$25.1 million—Seattle

$25 million—New Jersey—state medical & dental college

$19.6 million—San Francisco

$17 million—Orange County, Calif.—courthouse and hospital

$14.8 million—Westchester County, N. Y.—sewage treatment

$14.4 million—New Orleans—various purposes

$11.5 million—Cincinnati, Ohio—various purposes

$11 million—Hamilton County, Ohio

(*Continued on page 66*)

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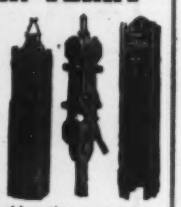

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$7.5 million—Louisville, Ky.—incinerator, street improvement
$7.1 million—Omaha, Neb.
$6.5 million—Rhode Island—state college and mental hospital
$6.5 million—Spokane County, Wash.—school districts
$5.5 million—St. Paul, Minn.—water system
$5.1 million—Lower Merion Tp., (Pa.) School District
$5.0 million—Pueblo County, (Col.) School District

Job cards promote safety help by insurance companies

The Accident Prevention Committee of the Associated General Contractors and the recently formed Insurance Advisory Committee have just devised a new method for keeping the insurance companies in closer touch with job risks. The advisory committee represents companies who write workmen's compensation and liability insurance for contractors.

These two groups, have worked out a "job notification postal card," to be sent by the contractor to his insurance carriers before he starts a job. That gives the insurance companies a chance to: (1) study the job from a safety engineering standpoint, (2) give the contractor the names of their local representatives, and (3) inform the contractor of local laws which may affect his insurance protection.

The card is a double postal card. The contractor fills out his side, folds and staples the two sides together, and mails it to his insurance company or companies. The carrier will then fill out its part of the card and return it to the contractor.

Cards can be ordered from AGC for 5 cents each or in some cases from the insurance companies.

Highway bidding stays tight, comparable to 1949 recession

As in other forms of heavy construction, bidding on highway work shows no signs of getting any less competitive.

That is pointed up in figures on the bidding on federal-aid work during August, just released by the Bureau of Public Roads. Low bids averaged 10.2% below engineers' estimates. The divergence has not been so great since late 1949, when the economy was going through a postwar readjustment.

At the same time, the number of

bidders on federal-aid contracts is continuing to increase. BPR says that bidders averaged 7.0 per job in the first half of this year, compared with 6.6 in 1953. During 1949, the average number of bidders was 6.3, the highest it had been in any postwar year until 1953.

Otis, Westinghouse charged with monopoly practices

Haughton Elevator Co., of Toledo, Ohio, has filed an anti-trust suit in federal court there asking $1.9 million in damages against Otis Elevator Co. and Westinghouse Electric Corp.

The two big firms are accused of using "improper influence" on public officials to cause "wrongful disqualification of low bids" by competitors, and "improper influence" on architects and engineers in making specifications. The suit contends that starting in 1936 Otis "coerced" Haughton to accept a series of licenses on Otis patents. The petition also asks the court to dissolve patent agreements between Otis and Westinghouse.

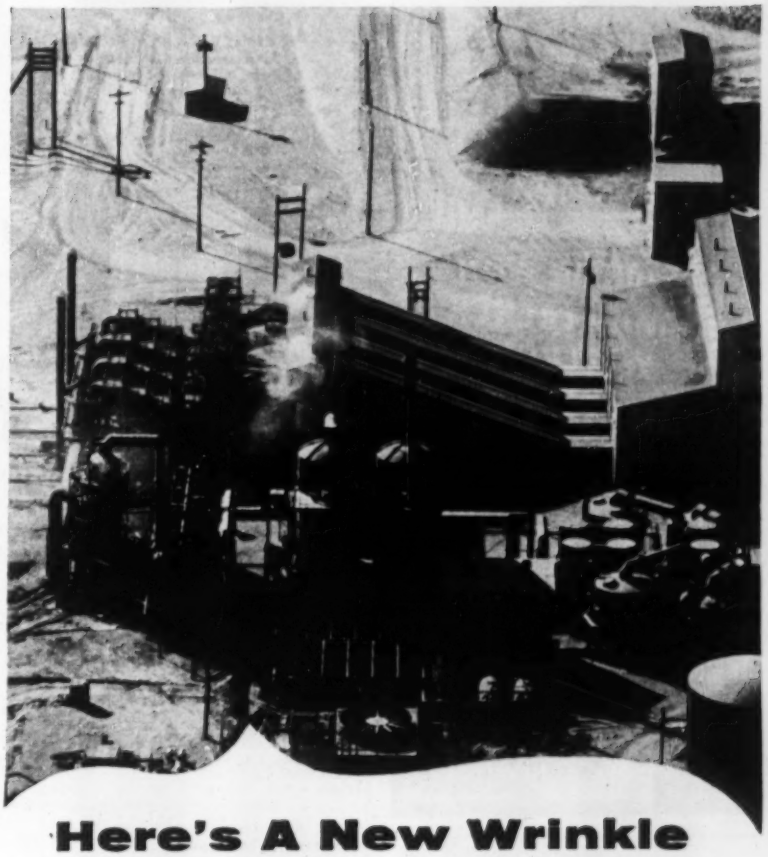
Otis and Westinghouse say they have not had time to study the charges. But Otis notes that it already has filed a patent infringement suit against Haughton.

Business briefs . . .

• **Merritt-Chapman & Scott Corp.** has completed its acquisition partly for stock, partly for cash, of the Toronto construction firm of C. A. Pitts General Contractor, Ltd. Also, stockholders owning more than 50% of the stock of Marion Power Shovel Co., Marion, Ohio, have accepted the MC&S tentative offer to exchange stock, thus putting it into effect. Marion Power Shovel, maker of excavating equipment and cranes, also has a subsidiary, Osgood Co., which makes smaller power shovels and cranes and operates a foundry for steel castings.

• **Kitimat smelting capacity** will be expanded immediately by 60,000 ingot tons a year, says Aluminium, Ltd. This will cost $45 million and boost capacity about 65%. Aluminum production started at Kitimat in late summer.

• **$23-million petrochemical plant** will be built near Pensacola, Fla., by a newly formed company, Gulf Chemical Co., if present plans mature. Backers will be Electric Bond & Share Co., United Gas Corp., and National Research Corp., who have been studying new chemical processes based on the use of natural gas.



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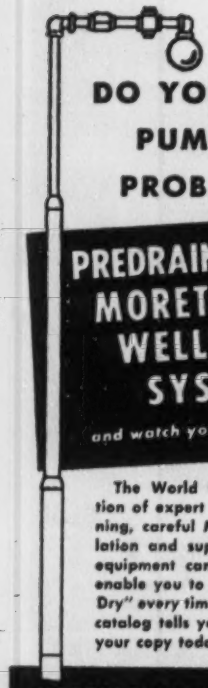

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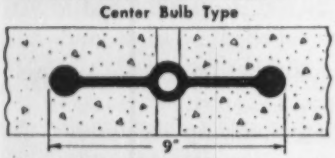

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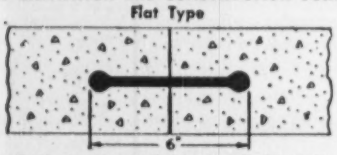

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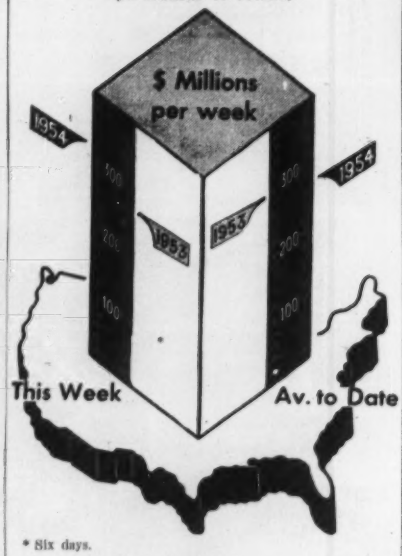


* Six days.

Amount of contracts let

	Wk. of Oct. 21 1954	Cumulative 42 wks 1954	Cumulative 42 wks 1953	% chge
Federal	$51.5	$1,032.1	$1,233.9	−16
State and municipal	96.0	3,992.7	4,064.7	−2
Total public	147.5	5,024.8	5,298.6	−5
Total private	175.7	6,578.9	6,919.3	−5
U. S. total	$323.2	$11,603.7	$12,217.9	−5

Contracts by type of work

Waterworks	$4.2	$193.1	$193.3	−0.1
Sewerage	15.4	311.2	357.4	−13
Bridges	5.1	408.8	541.8	−25
Highways	27.4	1,532.2	1,479.7	+4
Earthwork, waterways	28.7	269.5	307.3	−12
Buildings:				
Public, excl. hsg.	33.6	1,417.8	1,391.4	+2
Housg., public	10.5	198.4	334.6	−41
Housg., private	100.0	3,435.7	2,930.3	+17
Commercial	36.6	1,100.8	945.2	+16
Industrial	34.6	1,540.5	2,239.5	−31
Unclassified	28.0	1,195.7	1,497.4	−20
Total	$323.2	$11,603.7	$12,217.9	−5

NOTE: Minimum size projects included are: Waterworks and waterways, $34,000; other public works, $60,000; industrial buildings, $82,000; other buildings, $300,000.

New capital for construction

(millions of dollars)

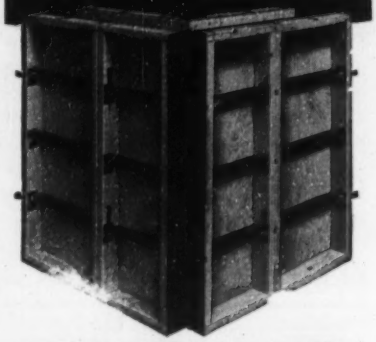
	Week of Oct. 14 1954	Cumulative 41 Wks 1954	Cumulative 41 Wks 1953	% chge '53-'54
Corporate securities	$52.4	$2,633.9		−27
State and municipal:				
All except housing	143.0	4,318.8		+31
Housing	4.3	95.3		−60
Federal loans	...	93.7		−1
Federal aid	...	673.0		−13
Total non-federal	$199.7	$7,814.7		−2
Federal appropriations:				
In U. S.	...	$2,073.3		+32
Outside U. S.	...	33.2		+15
Total new capital	$199.7	$9,921.2		+3

ENR cost and volume indexes, 1954

		Base years = 100 1913	1926	1949
Construction Cost	10/14	642.26	308.73	134.64
	9/30†	641.89	308.56	134.56
Building cost	10/14	455.91	246.45	129.60
	9/30†	455.54	246.25	129.49
Volume	Sept.	503	204	145
	Aug.	525	213	152

† Official ENR monthly index for October.

SYMONS



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Next Steps in Atomic Progress... A Challenge to American Industry

The purpose of this editorial is to throw light on the significance for American industry of recent changes in the statutes that control the development of atomic energy.

The need for clear light on the meaning of this new legislation is made more urgent by the political confusion and distortion that marked its course through Congress. The politically inspired charges of "giveaway" that delayed its passage—charges that were almost totally unrelated to the legislation itself—helped to obscure the vital importance of the step finally taken by Congress.

In sober, post-Congressional fact, the principal significance of the new atomic legislation is that it extends to private enterprise responsibility for the development of peaceful uses of atomic energy, whereas heretofore this responsibility has rested in a tight government monopoly. **And this extension is made on terms that emphasize the responsibility far more than they open any opportunity for economic gain in fulfilling it.** The revised Atomic Energy Act provides that:

1. Industry may now own and operate its own nuclear reactors, under license from the Atomic Energy Commission. And it may build and sell nuclear reactors for export.

2. Industry may use—but not own—nuclear materials at the discretion of the Atomic Energy Commission.

3. The Atomic Energy Commission will make available to industry scientific knowledge that may be useful in developing peaceful applications of nuclear energy.

4. For the first time, industry will have the right to patent inventions in the field of nonmilitary nuclear energy. However, "basic" discoveries must be made available to all companies in the field for a period of five years, after which they, too, will revert to normal patent status.

Two Kinds of Know-How

These provisions, despite the imposed limitations, represent the first positive step toward development of nuclear energy for peaceful applications in the United States. Potentially useful knowledge, previously locked in the minds of government scientists, will now be available to all those who are willing and able to put it to work for the good of mankind.

The advantages to be gained from enlisting the talents of American industry in the development of peaceful atomic applications are imposing. As *The* (London) *Economist*, Europe's leading economic journal, recently remarked, "The atomic scientists are in a position to surmise how atomic energy can be applied... but they lack the specialized knowledge of engineering design and operating technique just as industry itself lacks atomic knowledge." Now the engineers of private industry need no longer lack the atomic knowledge, and there is granted to them at least a restricted freedom to apply it to the solution of their engineering and operating problems.

But the new opportunity for private industry to find constructive uses for the science of nucleonics carries with it a grave responsibility. These uses must be so developed that they will benefit the people of all the free nations. It is essential that the United States, which pioneered in developing lethal uses for atomic fission, demonstrate to the world our paramount interest in its peaceful application. It would be a moral set-back to the free world almost beyond calculation if the Communists should be able to offer to the poorer nations of the world the benefit of low cost atomic power—provided by Communist technicians—while we concentrate primarily on building our stockpile of atomic and hydrogen bombs.

Race For a Peaceful Victory

Most of the experts are agreed that it may be many years—perhaps ten, fifteen or more—before the cost of electricity from atomic fission can be reduced to a level that will make it competitive with conventionally produced power in most regions of the United States. But most of the world is not nearly so fortunate as we are in power resources. Electricity, even at a cost far higher than the average that prevails in the United States, would be a blessing in many countries, and the nation that provides the technology to bring it into being will score a great moral victory.

The useful potential of nuclear energy is not restricted to the generation of electric power—although twenty years from now this use will be highly important to the power industry of the United States. Even with the limited research that has been done in this field thus far, the use of radioisotopes—the radioactive products of atomic reactors—is saving American industry an estimated $100 million a year. Commissioner Campbell of the AEC, who made this estimate, believes that these savings may well reach $1 billion a year within ten years. Radioisotopes are already at work in industries ranging all the way from paper manufacturing, where they measure paper thickness, to pipeline transportation, where they mark the dividing lines between shipments of different products (at an estimated saving of $500,000 a year). Medical applications of these same radioisotopes hold promise of longer and more comfortable lives for those who are stricken by cancer and other diseases.

Above All a Challenge

The new Atomic Energy Act is a crucial stride toward the day when all these benefits—and undoubtedly others not yet revealed by research—will be realized. But it is a step that is essentially permissive. It still leaves it to private industry for the most part to decide what is to be done and how soon.

The new act is thus, above all, a challenge. It confers on private industry the responsibility to assume a leading role in the development of peaceful uses for nuclear energy, a step long urged by NUCLEONICS, a McGraw-Hill magazine devoted to atomic energy. To achieve a success in this task that will measure up to the requirement of the national interest, this development must command all the resources and ingenuity that private enterprise can apply—and do so without promise of glittering prizes surely to be won. **But now that the responsibility has been defined and the challenge offered, American industry will, we believe, measure up to its grave and mighty import.**

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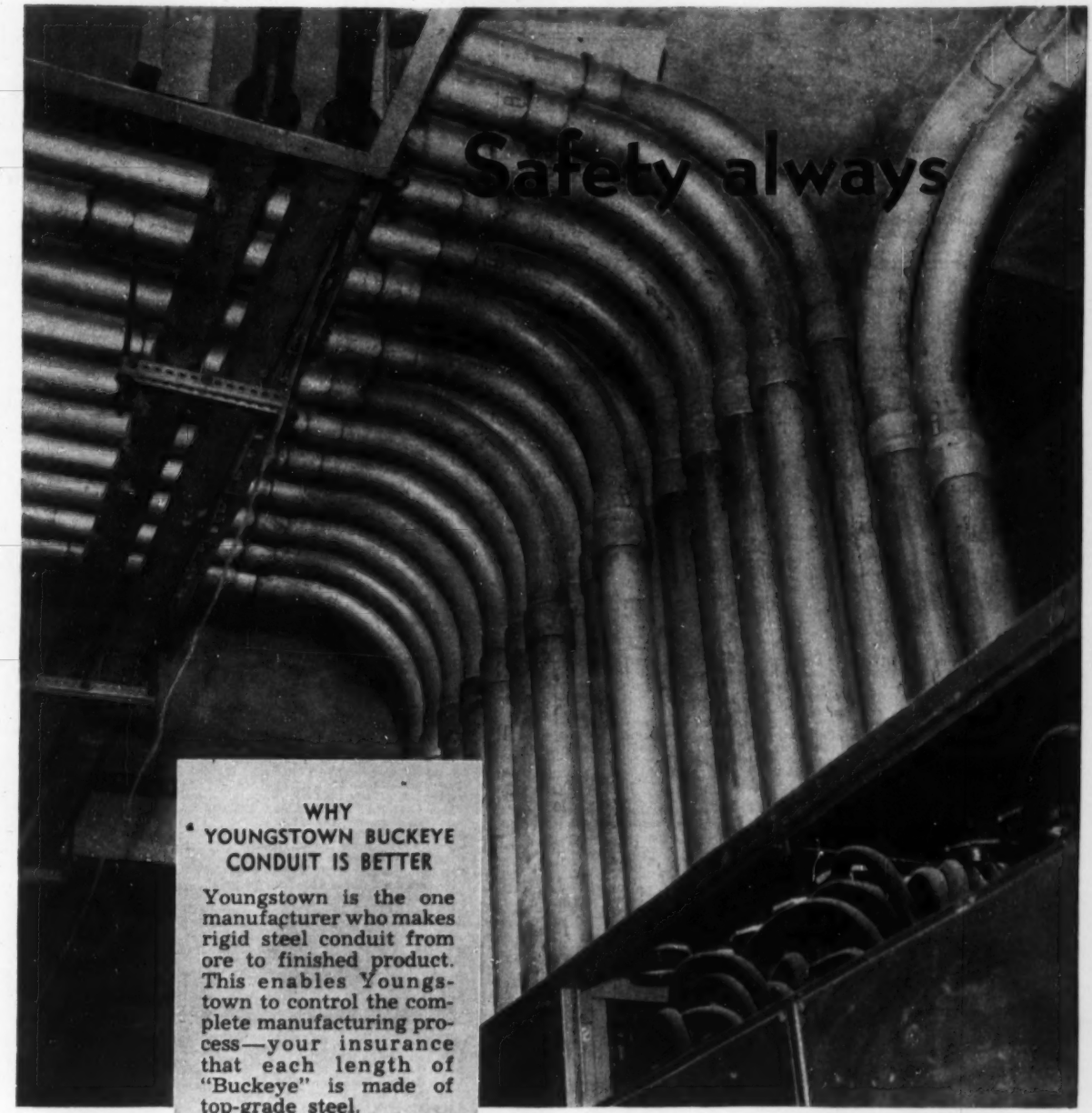

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New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.,—Pursuant to the provisions of the Highway Law, and Article 2, Title 9 of the Public Authorities Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., eastern standard time on the 28th day of OCTOBER 1954, by Henry A. Cohen, Director, Bureau of Contracts and Accounts, 14th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, N. F. Ronan, Acting District Engineer, 353 Broadway, Albany, N. Y.						
Saratoga	R.C. 54-103	Various Highways (Tree Removal)	....	Removal of 158 Trees	$750 Plans $10	$13,000
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica, N. Y.						
Madison	FAC 54-14	City of Oneida: North-South Art. Highway (No. Main St.) Proj. U-691(3)	0.64	Asp. Conc. Ty. 1A	$11,000 Plans $10	202,000
DISTRICT No. 5, C. R. Waters, District Engineer, 65 Court Street, Buffalo, N. Y.						
Erie	O.T. 54-5	New York State Thruway—Ontario Section—Subs. 9-10-11-12 & 13	7.14	6' Chain Link Fence	$7,500 Plans $10	140,000
Erie	FASS 54-16	Ridge Road C.R. 101 Proj. S-436(1)	0.19	Asp. Conc. Opt. Deck Beam Bridge 2 Spans Each 83'	$20,000 Plans $10	361,000
Niagara	FAC 54-10	City of Lockport: Genesee St.-Walnut St. Proj. U-709(4)	(0.32) (Hwy.) (0.30) (Acc.)	Asp. Conc.= 0.31 Mi Asp. Conc. Acc.= 0.26 Mi. Misc. Work = 0.05 Mi. Comp. I-Beam Br. 133.5'	$65,000 Plans $25	1,174,000
DISTRICT No. 8, J. S. Bixby, District Engineer, Pleasant Valley Road, Poughkeepsie, N. Y.						
Rockland	R.C. 54-104	Haverstraw-West Haverstraw, S. H. 5389 Tompkins Cove-West Haverstraw, S. H. 8049	1.85	Asp. Conc. Opt. R. C. Closed Box Br. 23.4'	$13,500 Plans $10	249,000
Westchester	FANETC 54-2	New York State Thruway—New England Section—Sub. 2 (North Ave. Drain) Proj. FI-1068(2)	0.49	Drainage and Misc. Work	$28,000 Plans $10	512,000
Westchester	FANET 54-6 FANETC 54-5	New York State Thruway—New England Section—Subs. 1 and 2A (N. Y. City Line to Kings Highway) and Local and Access Rds. Proj. FI-1068(6)	(1.25) (Thy.) (1.26) (Acc.)	9" Cem. Conc. Pavt. 2 @ 37' Var. Wide = 1.25 Mi. Cem. Conc. Pavt. Acc. Rds.= 0.80 Mi. Asp. Conc. Opt. (Local Rds.) = 0.46 Mi. Hy. Sep. Comp. I-Beam 64.6' Hy. Sep. R.C. Frame 50' Hy. Sep. Plate Girder 128.4'	$175,000 Plans $100	3,163,000
Westchester	FANETC 54-7 NETC 54-8 NET 54-9	New York State Thruway—New England Section—Sub. 2 (Kings Highway to Chatsworth Ave.) and Local and Access Rds. Proj. FI-1068(7)	(2.83) (Thy.) (3.85) (Acc.)	9" Cem. Conc. Pavt. 2 @ 37' Wide = 2.83 Mi. Cem. Conc. Pavt. Acc. Rds.= 2.30 Mi. Asp. Conc. Opt. (Local & Acc. Rds.) = 1.55 Mi. I-Beam & Plate Girder Viaduct 1259.7' 4 Hy. Seps. Rigid Frames 66', 40', 49' and 50' 4 Hy. Seps. I-Beams 131.9', 54', 291' & 148' 3 Hy. Seps. Plate Girders 124.9', 394', & 108.4' 1 Hy. Sep. R.C. Arch 24.7' 1 Hy. Sep. R.C. Slab 28' Repair Exist. Pony Truss	$740,000 Plans $100	14,252,000
DISTRICT No. 9, F. W. Donovan, District Engineer, 71 Frederick Street, Binghamton, N. Y.						
Sullivan	R.C. 54-102	Narrowsburg-Callicoon, Pt. 3, S. H. 8449; Callicoon-Long Eddy, Pt. 2, S. H. 8494	0.32	Repair, Clean and Paint 2 Bridges	$1,700 Plans $10	31,000
DISTRICT No. 10, M. E. Goul, District Engineer, Montauk Highway at Little East Neck Road, Babylon, L. I., N. Y.						
Bronx	FANETC 54-3	New York State Thruway—New England Section—Contract 5B, (Eastchester Creek Bridge Superstruct.) Proj. UI-1068(4)	0.17	Superstructure 527' Span Bascule Piers & Operating Mach. & Elect. Equip.	$125,000 Plans $50	2,273,000
Bronx	FANETC 54-4	New York State Thruway—New England Section—Subd. 6 (Cont. No. 1) Proj. UI-1068(5)	2.95	Grad. Drainage & Misc. Work 1 Hy. Sep. I-Beam 168.8' 2 Ped. Overpass I-Beam 62.2' & 62.2' 1 Ped. Overpass Plate Girder 99.8' 2 Hy. Seps. Comp. I-Beams 73.4' & 88.3' 1 Hy. Sep. Plate Girder 106.8' 1 Hy. Sep. Conc. Arch 90.5'	$380,000 Plans $100	6,910,000

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts and Accounts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "General Information for Bidders" in the proposal, specification, and contract agreement, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Instructions to Bidders."

When optional types are permitted on contracts with federal funds, bidders must state in the space provided in the proposal the exact designation of the optional type upon which the proposal is predicated.

The right is reserved to reject any or all bids.

B. D. TALLAMY
SUPT. OF PUBLIC WORKS

Read the Official Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

OFFICIAL PROPOSALS

Bids: November 10, 1954

Delaware River Port Authority Administration Building Camden, New Jersey

GLOUCESTER APPROACHES
TRUSS SPANS SUPERSTRUCTURE,
GLOUCESTER ANCHORAGE TO
NEWTON CREEK
CONTRACT NO. G-2

Sealed bids will be received for TRUSS SPANS SUPERSTRUCTURE GLOUCESTER ANCHORAGE TO NEWTON CREEK, for new bridge between Packer Avenue, Philadelphia, Pennsylvania, and Gloucester, New Jersey, known as Contract No. G-2, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Bridge Plaza, Camden, New Jersey, until 2:30 P. M. (Eastern Standard Time), November 10, 1954, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon a deposit of $10.00 which will be remitted upon receipt of bid or the return in good condition of the copies so taken within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $275,000, payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania, or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialmen's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO,
Executive Director

Bids: November 23, 1954

Philadelphia, Penna. Procurement Department Water Department

Sealed proposals will be received in Room 313, City Hall Annex, until 2:30 P.M., Eastern Standard Time, Tuesday, November 23, 1954 and opened at that time, for Bid No. 2263—Contract No. M-112.

FRANKFORD CREEK FLOOD CONTROL PROJECT

This contract covers the completion of the Frankford Creek Flood Control Project and includes the cutting of a new channel parallel to the Philadelphia Seashore Railroad from the Frankford Street Branch Bridge to the Delaware River, approximately 5800 ft. long, 120 ft. wide.

It includes a single track railroad bridge with through plate girders with two 77 ft. spans; one double track railroad bridge with through plate girders with two 78 ft. spans; one highway bridge, steel I beams with concrete deck of two 75 ft. spans with a 34 ft. roadway and two 13 ft. sidewalks and two trolley tracks; one highway bridge, steel I beams with concrete deck of two 75 ft. spans with a 30 ft. roadway and two 10 ft. sidewalks.

The project involves 600,000 cu. yds. of common excavation, 82,000 cu. yds. of pilot channel dredging and miscellaneous items in connection with the new channel. The proposal also includes an alternate bid for 3500 cu. yds. of new channel with the two railroad bridges, which includes 343,000 cu. yds. of common excavation and 82,000 cu. yds. of pilot channel dredging and miscellaneous channel items.

Contractors Watch This Section —

for new projects. Publish your announcements through the proposal sections of *Engineering News-Record* and get their bids.

OFFICIAL PROPOSALS

Proposal forms, questionnaires, and specifications may be obtained from the Water Department, in Room 1131 City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. Blueprints of plans may be purchased at bidder's expense, directly from the Keystone Blue Paper Company, 51 North 13th Street, Philadelphia, Penna.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 1106 City Hall Annex, at least one (1) week prior to the date of opening bids.

Each proposal must be accompanied by security in form and amount as set forth in the proposal form.

Michael Sura, Acting Commissioner.

Bids: November 30, 1954

Contract PW-2128A

Sealed proposals for five electric motor-driven pumps, located at 9300 West Vernor, Detroit, Michigan, addressed to the CITY ENGINEER'S OFFICE, DEPARTMENT OF PUBLIC WORKS, of the City of Detroit, and endorsed: "Proposal for Contract PW-2128A" will be received at the OFFICE OF THE CITY ENGINEER, 30TH FLOOR, GUARDIAN BUILDING, DETROIT 26, MICHIGAN, until 2:00 p.m., City of Detroit Time, on Nov. 30, 1954, at which time they will be publicly opened and read aloud. Any proposal received after the abovementioned time will be returned to the bidder unopened.

The work included consists of the furnishing and installing of five electric motor-driven pumping units, three storm water units each having a capacity of 255 cubic feet per second against a 25 foot static head, and two sanitary units each having a capacity of 8 cubic feet per second against a 35 foot total dynamic head, for a new pumping station. The pumping units consist in general of pumps, synchronous motors, exciters, field cubicles and line shafting.

The accessories consist, in general, of furnishing and installing all suction and discharge castings and piping of the pumps, five flow meters, and water level gauges.

The Contract Documents, including Notice to Bidders, Form of Proposal and Agreement, Drawings and Specifications may be examined at the Office of the City Engineer, and copies may be obtained by making a deposit of $10.00 per set, which sum will be refunded upon the return in good condition of the complete set of Contract Documents within ten days after receipt of proposals, or if used in submitting a bona fide proposal.

Each proposal shall be accompanied by a certified check or a satisfactory bidder's bond in an amount of not less than 5 percent of the total bid price, as security for the acceptance of the Contract.

All checks shall be made payable to the Treasurer, City of Detroit.

No bid, after being submitted, may be withdrawn for at least 45 days after the actual opening of bids.

The City of Detroit reserves the right to waive any informality in any bid, or to accept any bid, or to reject any or all bids, should it be deemed for its best interests so to do.

CITY OF DETROIT
GLENN C. RICHARDS
Commissioner of Public Works
M. F. WAGNITZ
City Engineer

Bids: November 10, 1954

Indiana Toll Road Commission 309 W. Washington Street Old Trails Building Indianapolis, Indiana

NOTICE TO BIDDERS
Contract C-31
Contract C-32
Contract C-31 and C-32

Sealed proposals will be received by the Indiana Toll Road Commission at or before 11:00 A.M., Central Standard time, November 10, 1954, for the performance of each of the Contracts enumerated above.

CONTRACT NO. C-31

The grading, drainage, structures and paving of approximately 4.0 miles in Construction Section C-31 of the Indiana East-West Toll Road beginning at a point about 895 feet west of Evergreen Road at Toll Road Centerline Station 4557 + 00 in St. Joseph County and extending eastwardly to a point about 3,267 feet west of Ash Road at Toll Road Centerline Station 4768 + 00 in St. Joseph County, Indiana. The approximate quantities of the major items of construction are as follows:

Common Excavation	162,000 Cu. Yds.
Borrow	594,000 Cu. Yds.
10" Reinforced Concrete Pavement	115,300 Sq. Yds.
Culvert Pipes and Underdrains	4,100 Lin. Ft.
Cast-in-Place Concrete Piling	10,100 Lin. Ft.
Concrete for Structures	2,610 Cu. Yds.
Reinforcing Steel	370,560 Lbs.
Fabricated Structural Steel	909,490 Lbs.

CONTRACT NO. C-32

The grading, drainage, structures and paving of approximately 4.7 miles is Construction Section C-32 of the Indiana East-West Toll Road beginning at a point about 3,267 feet west of Ash Road at Toll Road Centerline Station 4768 + 00 in St. Joseph County and extending eastwardly to a point about 782 feet east of Adamsville Road at Toll Road Centerline Station 5015+70 in Elkhart County, Indiana. The approximate quantities of the major items of construction are as follows:

Common Excavation	19,200 Cu. Yds.
Borrow	1,044,000 Cu. Yds.
10" Reinformed Concrete Pavement	136,400 Sq. Yds.
Culvert Pipes and Underdrains	4,850 Lin. Ft.
Cast-in-Place Concrete Piling	13,300 Lin. Ft.
Concrete for Structures	3,030 Cu. Yds.
Reinforcing Steel	373,975 Lbs.
Fabricated Structural Steel	1,104,000 Lbs.

The work covered by Contract C-31 and C-32, which covers a combination of Construction Sections C-31 and C-32, is the construction as above described for the individual Construction Sections, taken together.

Copies of the Plans, Specifications and Proposal Forms for said Contracts are available for public inspection or purchase at the office of the Chief Engineer, Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. These documents may be purchased from said Chief Engineer for the following sums, per set, which sums are non-returnable:

Standard Specifications for the Indiana East-West Toll Road	$ 5.00
Plans, Special Provisions and Proposal Forms, per set, per Construction Section	$25.00
Informational Drawings	
Cross-Sections, per set, per Construction Section	$25.00
Soil Plan and Profiles, per set, per Construction Section	$ 5.00

All Proposals must be on the form prescribed by the Commission and must comply with the terms and conditions set forth in the Contract Documents.

Contractor's statement for qualification on the forms supplied by the Commission will be required from all Bidders.

Each Proposal must be accompanied by a Proposal Guaranty in the amount of five (5%) per cent of the total price bid per Construction Section covered by the Contract. If the Bidder shall tender bids for two or more Contracts which include the same Construction Section, the Construction Section thus duplicated in the bidding need be counted only once in determining the total amount of the Proposal Guaranty. The Proposal Guaranty shall be in the form of an acceptable surety bond or certified check on a solvent bank.

If the Bidder is an out of state corporation, he shall be required to furnish a certificate from the Secretary of State of Indiana as evidence that the corporation has complied with the Indiana Foreign Corporation Statutes, and that the corporation is authorized to transact business in the State of Indiana.

All bids must be received at or before 11:00 A.M., Central Standard time, November 10, 1954, in the offices of the Indiana Toll Road Commission, 309 W. Washington Street, Indianapolis, Indiana. At said hour, the bid box will be publicly opened and the bids read.

The award of any of the above-enumerated Contracts, if any award be made, will be to the Bidder or Bidders whose Proposal or combination of Proposals is lowest and best for the performance of the work, taken as a whole, and complies with all the prescribed requirements. The Commission reserves the right to reject any or all Proposals and to waive technicalities.

INDIANA TOLL ROAD COMMISSION
Dr. Dillon Geiger, Chairman
Charles W. Keating
Secretary-Treasurer

OFFICIAL PROPOSALS

Bids: November 2, 1954

Aerial Lift Bridge Over the Duluth Ship Canal

CITY OF DULUTH, MINNESOTA
NOTICE TO BIDDERS

1. Sealed bids for the reconstruction of the lift span floor of the Aerial Lift Bridge over the Duluth Ship Canal will be received by the Commissioner of Public Utilities of the City of Duluth, Minnesota at his office, in the City Hall, in the City of Duluth, Minnesota until 11:00 a.m., C.S.T. November 2, 1954, at which time the bids will be publicly opened and read.

2. The project for which bids are required includes removal of asphalt plank, timber flooring and street car rails and miscellaneous materials from the lift span roadway and construction of a new open grating floor thereon. The work will also include concrete floor fill, asphalt sidewalk resurfacing and re-adjustment of counterweight balance. The construction will require the following approximate quantities of materials:

9,300 sq. ft. of open steel floor grating, 13 cu. yds. of concrete floor fill and 430 sq. yd. of 1" thick asphaltic concrete surfacing.

3. Each bid shall be accompanied by a cashier's or certified check in an amount not less than five per cent of the total amount of the proposal. Bids and bid checks may be held for a period of not more than thirty days after the date of opening; thereafter, bid checks will be returned to bidders who are not awarded contracts. Bid checks will be returned to the successful bidder upon execution of the contract form and submission of acceptable performance bond.

4. All work except concrete floor fill and sidewalk resurfacing is to be completed and the materials installed in not more than 120 calendar days after receipt of notice to proceed. Delayed completion must be compensated by liquidated damages. A performance bond will be required.

5. Copies of plans and specifications are on file and may be examined at the office of the Division of Public Utilities, City Hall, Duluth, Minnesota and at the office of Howard, Needles, Tammen & Bergendoff. Consulting Engineers, 1805 Grand Avenue, Kansas City, Missouri. Prospective bidders will be supplied two sets of plans and two copies of specifications upon application to Howard, Needles, Tammen & Bergendoff. Consulting Engineers, 1805 Grand Avenue Kansas City, Missouri and payment of $5.00 therefor.

6. The City of Duluth reserves the right to reject any or all bids and to make award without technicalities as to procedure.

City of Duluth, Minnesota
Division of Public Utilities
Ernest A. Bodin, Commissioner

Bids: November 9, 1954

Fairfax County, Virginia Integrated Sewerage System

Sealed bids will be received by the Board of County Supervisors of Fairfax County, Virginia, at the Office of the Sanitary Engineer, County of Fairfax, Fairfax, Virginia, until Tuesday, November 9, 1954, at 2:00 o'clock, P.M. Eastern Standard Time, for the construction of:

CONTRACT NO. 28: Approximately 18,700 lineal feet of 8 and 10 inch sanitary sewers and appurtenances.

CONTRACT NO. 29: Approximately 16,200 lineal feet of 10 to 36 inch sanitary sewers and appurtenances.

CONTRACT NO. 31: Approximately 11,700 lineal feet of 8 inch sanitary sewers and appurtenances.

CONTRACT NO. 32: Approximately 22,200 lineal feet of 8 inch sanitary sewers and appurtenances.

Promptly thereafter they will be publicly opened and read in the Board of County Supervisors Room, County Office Building, Fairfax, Virginia.

Plans, specifications, and contract documents may be examined and copies thereof may be obtained at the Office of the Sanitary Engineer, upon payment of Ten Dollars ($10.00) per Contract, which amount shall not be returnable.

All bids must be on the form contained in the Contract and Specifications.

Contractors, whether resident or non-resident in Virginia, will be required to show evidence of a Certificate of Registration as required by Chapter 7 of Title 54 of the Code of Virginia before their bids will be considered, if the bid is $20,000 or more.

Each bid must be accompanied by cash, or by the certified check of the bidder, made payable to the Director of Finance, County of Fairfax, Virginia, or by an acceptable bidder's bond in an amount not less than Five Percentum (5%) of the amount of the total bid. The successful bidder will be required to furnish a performance and maintenance bond in a penal sum equal to the full contract price.

No bid may be withdrawn for a period of thirty (30) days after the actual opening thereof and the right is reserved to waive any informality therein and to reject any or all bids.

COUNTY OF FAIRFAX, VIRGINIA
By: Harry L. Hale, Sanitary Engineer
Dated: October 14, 1954

Bids: November 30, 1954

New Jersey Turnpike Authority

CONTRACT NO. N-17

Proposals are invited for Contract No. N-17 which involves grading, drainage, paving and other incidental work, from Brown Place to Communipaw Avenue in the City of Jersey City, Hudson County, New Jersey, all in connection with the construction of the Newark Bay-Hudson County Extension of the New Jersey Turnpike.

The principal items of work include:

Muck Excavation	550,000 Cu. Yds.
Embankment	3,500,000 Cu. Yds.
Overload Removal	80,000 Cu. Yds.
Storm Drains, Reinforced Concrete Pipe	22,000 Lin. Ft.
Manholes and Drop Inlets	300 Units
Portland Cement Concrete Pavement	122,000 Sq. Yds.
Bituminous Concrete Pavements	65,000 Sq. Yds.
Bridge Approach Slabs	6,000 Sq. Yds.
Curb	48,000 Lin. Ft.
Guard Rail	22,000 Lin. Ft.
6-Inch Topsoiling or Surface Preparation and Seeding	240,000 Sq. Yds.

Proposals will be received at the New Jersey Turnpike Authority Administration Building, New Brunswick, New Jersey, until 11:00 o'clock Eastern Standard Time on the morning of November 30, 1954, at which time and place said proposals will be publicly opened and read.

Bidders must submit with their proposal a Contractor's Financial and Equipment Statement.

Contract documents may be examined during office hours after October 25, 1954, at the office of the Authority and at the office of the Consulting Engineers, Howard, Needles, Tammen & Bergendoff, 55 Liberty Street, New York 5, New York. Contract documents will be furnished upon payment of Fifteen Dollars ($15.00) for each set upon application to the Authority. Contract documents are not required to be returned and the payment will not be refunded.

NEW JERSEY TURNPIKE AUTHORITY
Paul L. Troast, Chairman

October 21, 1954

Bids: November 18, 1954

Philadelphia, Penna. Procurement Department Water Department

Sealed proposals will be received in Room 313, City Hall Annex, until 2:30 P.M., Eastern Standard Time, Thursday, November 18, 1954, and opened at that time, for Bid No. 2262—Contract No. 184-W.

FILTER BUILDING SUBSTRUCTURES
TORRESDALE FILTER PLANT
STATE ROAD AND PENNYPACK STREET
DESCRIPTION OF WORK

The work covered by this bid includes in general the construction of substructures for a rapid sand filter plant, having a normal capacity of 282 M.G.D. The work consists of furnishing all labor, materials and appurtenances necessary for Constructing the Substructures for 94 filter units, all water conduits, channels and drains; furnishing and installing under-drainage systems, including filter sand and gravel; installation of wall castings; and other appurtenant work.

Proposal forms, specifications, questionnaires and blueprints may be obtained from the Water Department, in Room 1131 City Hall Annex, Juniper Street and Filbert Street, Philadelphia 7, Penna. A deposit of twenty-five (25) dollars in cash or certified check is required for each set of blueprints and specifications. This deposit will be refunded upon return of the blueprints, unmarked and in undamaged condition within ten (10) days after bids are received.

No bids will be received unless bidder is qualified by the Procurement Commissioner. The questionnaire form with all questions fully answered must be filed with the Water Commissioner, 1106 City Hall Annex, Philadelphia, Pennsylvania, at least one (1) week prior to the date of opening bids. Each proposal must be accompanied by security in form and amount as set forth in the proposal.

Michael Sura, Acting Commissioner.

U. S. Government

Sealed bids for furnishing and installing four new generators at Gatun Hydroelectric station, Panama Canal Zone, will be received in the office of the Engineering and Construction Director, Balboa Heights, Canal Zone until 10:00 AM, November 17, 1954 at which time they will be publicly opened. Plans and specifications are available at the office of Procurement Officer, Panama Canal Company, 21 West Street, New York 6, New York. Deposit of $40.00 required.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4273) will be received at Yuma, Arizona, until November 18, 1954, for furnishing labor and materials for: earthwork, concrete lateral lining, and structures, Unit 4, Mohawk Distribution System, Wellton-Mohawk Division, Gila Project. Location: vicinity of Wellton, Arizona, in Yuma County. Principal items are: 191,200 cu. yds. excavation for laterals, wasteway channel and dikes, clay material, and structures; 7,150 cu. yds. concrete in lateral lining, unreinforced; 6,060 lin. ft. furnishing and laying concrete pipe of various sizes and kinds; 132 gates furnishing and installing slide gates, (89 cast-iron—43 steel); 600 flap valve weeps, placing flap valve weeps in concrete lining; and other work. Completion time 360 days. For particulars, address Bureau of Reclamation, Yuma, Arizona; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-4275) will be received at Madras, Oregon, until November 17, 1954, for furnishing labor and materials for Crescent Lake Dam. Location: near Crescent Lake, Oregon in Klamath County. Principal items are excavation 33,300 cu. yds.; dam embankment 14,300 cu. yds.; concrete, 1100 cu. yds.; and other work. Completion time 420 days. For particulars, address Bureau of Reclamation, Boise, Idaho; or Building 53, Denver Federal Center, Denver, Colorado.

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Proposal Columns of

ENGINEERING NEWS-RECORD

This Week and Every Week

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EQUIPMENT WANTED or FOR SALE Advertisements acceptable only in Displayed Style.

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The advertising rate is $20.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.
AN ADVERTISING INCH is measured ⅞ inch vertically on one column, 3 columns—30 inches—to a page. E.N.R.

Send NEW ADVERTISEMENTS: To New York Office, 330 W. 42nd St., N. Y. 36 for November 11th issue closing November 1st.

WANTED
EXPERIENCED SALESMAN
For Heavy Construction Equipment
In Northern New Jersey
Must know Territory
SW-3880, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

REPLIES (Box No.): Address to office nearest you
NEW YORK: 330 W. 42nd St. (36).
CHICAGO: 520 N. Michigan Ave. (11)
SAN FRANCISCO: 68 Post St. (4)

POSITIONS VACANT

JR. CIVIL Engineers. Instrumentmen. Map Draftsmen needed for expanding Highway Program in Nevada. State Personnel Department, Carson City, Nev.

DRAFTSMAN WANTED—Experienced in detailing miscellaneous and/or structural steel by Bushnell Steel Company. P. O. Box 2579, Jacksonville, Florida. Reply giving brief resume of experience, education, availability, and salary expected.

STRUCTURAL ENGINEER Wanted—Experienced in designing and estimating structural steel, by Bushnell Steel Company, P. O. Box 2579, Jacksonville, Florida. Reply giving brief resume of experience, education, availability, and salary expected.

WANTED SOIL Mechanics, concrete and asphalt inspectors and technicians. Recent graduates with soil mechanics and concrete laboratory training may apply. Openings in field and laboratory for construction contracts of turnpikes and large engineering projects in the middlewest. Send resume to: Testing Service Corporation, 710 North Brookfield Street, South Bend 28, Indiana.

ENGINEERING GEOLOGIST having a minimum of 15 years experience in field and laboratory work in soils, foundation studies and design. Work would be in connection with construction of structures, highways and embankments. Applicant should be registered P.E. and be capable of assuming charge of the soils department. Excellent opportunity with long established engineering firm in Midwest. P-4115, Engineering News-Record.

WANT STRUCTURAL detailer, experience required. Engineering background desirable. Eugene F. Wilsey Company.—Sioux City, Iowa.

LARGE EASTERN contracting company engaged in heavy construction desires man to fill position as superintendent of equipment maintenance. Position permanent for right man. Include age, family data, education experience, references and salary expected in application letter. P-4221, Engineering News-Record.

CIVIL ENGINEER — competent and experienced in the preparation of detailed specifications and contract documents for water works and sewerage projects, mechanical and electrical work. Location — Central Ohio. Consulting engineers office. Permanent position intended. State experience, when available and salary requirements. P-4220, Engineering News-Record.

EXPERIENCED ENGINEER as construction superintendent to take complete charge of large sewer job. Permanent connection to right man. Salary plus bonus. Give complete resume of back-ground and experience. P-4225, Engineering News-Record.

EXECUTIVE SECRETARY for Construction Management Trade Association located in Northwestern Pennsylvania. Annual budget $12,000. Reply P-4208, Engineering News-Record.

(Continued on page 76)

UTILITIES ENGINEER
Foreign Service
B.S. degree in mechanical or chemical engineering plus minimum five years' experience in operational and maintenance phases of steam electric power plant.
Write giving full particulars regarding personal history and work experience. Please include telephone number.
Recruiting Supervisor, Box 84
ARABIAN AMERICAN OIL CO.
505 Park Avenue New York 22, N. Y.

Sales Engineer
Calling on Engineers and Construction firms to sell special cements and compounds for corrosion resistance, water works and sewage, pipe jointing, etc. Company in business over 50 years. Commission basis. Leads furnished. No objection to a few non-competitive lines. Send complete history and references to:
SAUEREISEN CEMENTS CO.,
Pittsburgh 15, Pa.

CIVIL ENGINEERS
Junior positions in California's huge highway program. High level professional experience with excellent promotional opportunities offered to recent college graduates in civil engineering. $376 to start with raise after six months. Positions open at this level only. Write Section E, State Personnel Board, 1015 L Street, Sacramento 14, Calif.

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Midwest Consulting Office of forty-years standing in Municipal and Industrial field has fine opening for experienced designer of heating, ventilating, air conditioning, plumbing (and electrical). Fine town, fine clientele. Permanent for right man. State salary requirement.
P-4230, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CONTROLLER
Young, aggressive Southern firm operating in the South, Southeast, Southwest, West and Midwest desires services of a controller with construction experience. Only persons of high calibre with executive ability need apply. Reply fully giving age, education, experience, when available and salary desired.
P-4168, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

Expressway Engineers Wanted
Midwest engineering firm has openings for two experienced expressway engineers on supervisory level for design of roadway and interchanges and design of bridges and drainage structures. Complete information on background, work history, salary, etc. requested. All replies held strictly confidential.
P-4278, Engineering News Record
520 N. Michigan Ave., Chicago 11, Ill.

District Construction Manager
Large national engineering and construction company with headquarters in the midwest seeking graduate engineer with several years varied experience in the mechanical and building phases of construction to serve as construction manager of midwestern district. Position involves the supervision and direction of project superintendents on both building and mechanical type projects, including analysis of costs and methods relating to each project. There will be considerable travel. Experience as a district construction supervisor or project manager on several large projects is desired.

Persons qualified should submit a complete resume stating experience, education and salary requirements. All replies treated confidential. Interviews arranged for qualified applicants.

P-4072, Engineering News-Record
330 W. 42 St., New York 36, N. Y.

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Civil Graduates of accredited U. S. colleges. Must have not less than the following experience:
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POSITIONS VACANT

(Continued from page 75)

IRRIGATION ENGINEER with agricultural, hydraulic and construction experience to design and supervise installation small irrigation systems South and Southeast. Permanent position with rapidly expanding firm. Excellent opportunity for ambitious young man. Submit resume, age, education, experience, list of references, salary requirements, availability. Box P-4226, Engineering News-Record.

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CIVIL ENGINEERING Graduate to act as General Superintendent or Project Manager on marine construction in Virginia. State experience, qualifications and salary expected. P-4314, Engineering News-Record.

STRUCTURAL CHIEF Draftsman to organize and run drafting room for medium size structural shop in large city on eastern seaboard. State age experience and salary requirements. P-4315, Engineering News-Record.

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MEMORANDUM

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PW-4247, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

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CONSTRUCTION EXECUTIVE, long New York experience buildings and heavy construction, available for new connection as Project Manager on large operation or as Contractor's executive, where scope will permit full use of ability. Inquiries solicited from contractors requiring top man, qualified to handle all phases, bid to completion. New York area preferred. PW-3661, Engineering News-Record.

CONSTRUCTION SALES Executive, 20 years experience New York commercial and industrial construction, available for new connection. C.E. Grad., Reg. Prof. Engr. Presently employed as sales manager by New York City firm of engineers and contractors. Inquiries solicited from engineering and construction firms requiring top man to increase sales volume. New York area preferred. PW-4046, Engineering News-Record.

ESTIMATOR, CHIEF Engineer for heavy construction only. Executive, with broad experience in both field and office on all types of heavy construction, and with proven ability to supervise estimating, and engineering departments, invites replies from progressive heavy construction contractors. After twenty years with well established company, desires change. PW-4092, Engineering News-Record.

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ENGINEER SUPERINTENDENT, Young graduate C.E. Registered P.E. 7 years experience in heavy construction, currently employed by a small utilities contractor, desires a position with a larger concern. PW-4145, Engineering News-Record.

DESIRES RESPONSIBILITY of supervision on heavy construction. Experience in all phases on dams, floodwalls, highways and airdromes. Still young. Reply PW-4174, Engineering News-Record.

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ENGINEER—BSCE, age 31, 4 yrs. experience in industrial and heavy construction, office and field. 3 yrs. experience in highway and airport surveys and layout. PW-4255, Engineering News-Record.

CONSTRUCTION MANAGER. Grad. C.E. 15 yrs. responsible contracting & engr. background in bldg. constr., & exper'd. in estimating, buying, contract negot'n., new business, coord. design & constr., field sup'v. Proven exec. ability & skilled in archt.-owner-contr. and govt. relations. Registered. Will travel. PW-4253, Engineering News-Record.

ESTIMATOR & PROJECT Manager available to responsible General Contractor on 30 days notice. Sixteen years experience analyzing, bidding, buying and building Municipal, Industrial and Federal projects. Proven ability for obtaining and organizing successful work. Salary and profit-sharing preferred. PW-4252, Engineering News-Record.

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CIVIL ENGINEER, BSCE, 30, single, available for foreign or domestic construction. 5 years field and office experience in civil and structural design, planning, scheduling, methods, inspection, supervision of heavy construction. PW-4267, Engineering News-Record.

CIVIL ENGINEER 30 years estimating, design, field supervision heavy construction. PW-4268, Engineering News-Record.

CHIEF ACCOUNTANT and office manager, twenty years diversified experience, sober, reliable and capable of taking complete charge. PW-4269, Engineering News-Record.

ENGINEER, BME, BCE, Registered New York. CEC, USN 7 years. To be discharged 10 November. Will work, learn, travel. Prefer construction or consulting fields. PW-4293, Engineering News-Record.

CIVIL ENGR., 36, veteran, good health, registered Ill. and Mo., 13 yrs. experience, 8 yrs. consulting firm, 6 yrs. responsible charge. Qualified all phases consulting service. Currently employed. Desire position with future, with adequate salary commensurate with ability. PW-4288, Engineering News-Record.

CIVIL & SANITARY Engineer, BSCE, MSSE, 31, 5 years responsible engineering and administrative experience. Ability to organize, supervise and work with others. Desire responsible position requiring competence, drive and initiative in sales, industry or construction. Will relocate. PW-4308, Engineering News-Record.

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Attention: Architects—engineers—and contractors. Engineering materials testing laboratory engaged approximately thirty years on major construction projects from East Coast to West Coast is interested in contacting engineering and construction companies working on large scale Domestic or Foreign projects for the purpose of furnishing specialized engineering services. Would be interested in negotiated contracts or on a joint venture basis. Large staff of highly trained engineers, excellent references and strong financial position. BO-4162, Engineering News-Record.

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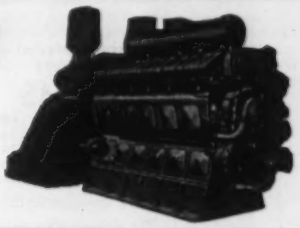

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700	Worthington	EE-8	1000	327	175	General Motors	12-71	275	1800
600	General Motors	12-567	860	600	150	Worthington	CC-4	225	450
500	General Motors	8-567	720	720	150	Buckeye	80	240	600
500	Alco	6-12jx13T	750	600	148	Fairbanks Morse	32E14	220	300
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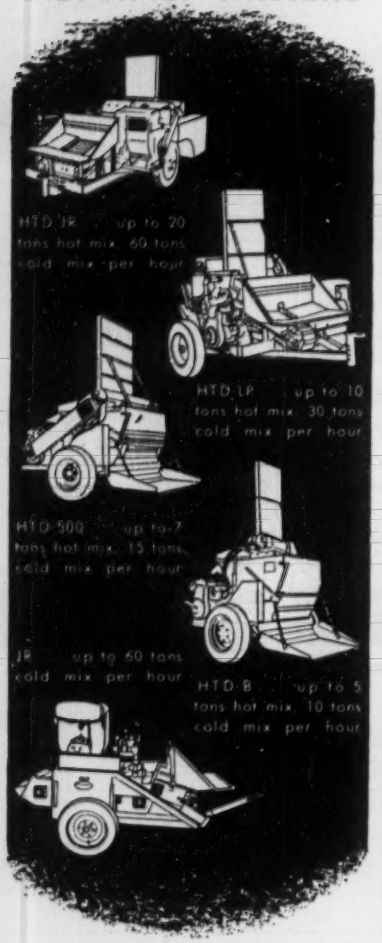
HTD JR up to 20 tons hot mix, 60 tons cold mix per hour
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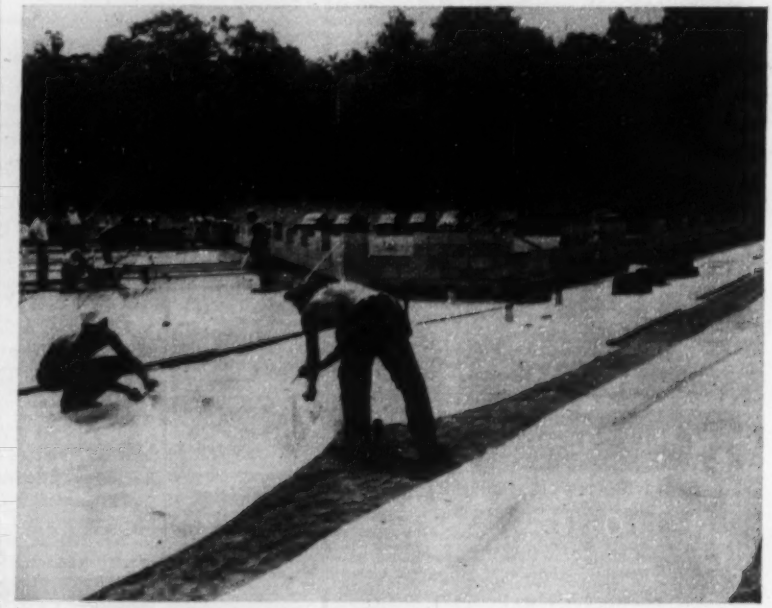
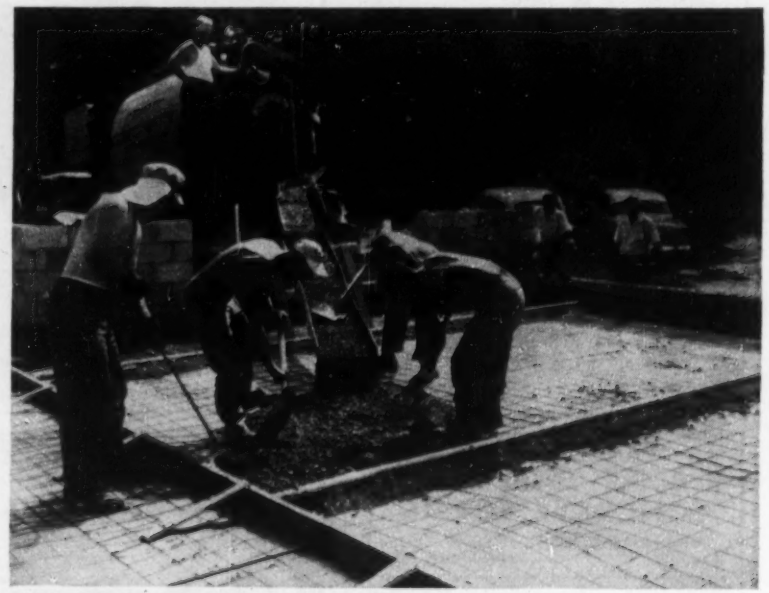


AS AN UNDER-SLAB VAPOR BARRIER the film is laid directly over a prepared sand base. Asphalt cement is used to secure the plastic sheeting at the walls.



WIRE REINFORCEMENT or heating coils can be installed over the plastic film.

Plastic Film: a potential cost cutter

A versatile plastic material will soon be making its appearance around construction sites throughout the country. The polyethylene sheeting has potential applications as a vapor barrier, tarpaulin, temporary glazing and concrete curing aid.

Tradenamed Visqueen, the sheeting should do well as a replacement for roll roofing when used as a vapor barrier under slabs and in crawl spaces. Light, flexible and tough, the material has the added advantage of being available in widths up to 16 ft. This fea-

ture makes for faster installation than with conventional materials and therefore lower labor costs. Price of the plastic runs about 1½ to 1¾ cents psf.

Manufacturer-approved specifications for use under slabs omit any reference to a gravel or crushed stone base but do advise a smooth sub-grade such as sand to prevent punctures. A .004-in. thickness of sheeting is recommended with a 6-in. uncemented lap—pressure of the poured concrete is said to affect a moisture proof bond between the sheets.

A lighter material, .002 in. thick, is recommended for side wall application with a minimum lap of 3 in.; laps of 6 in. are recommended at the ceiling and floor. It is suggested that a stapler be used to effect the installation. The same .002-in. thickness is recommended for use between wood sub-floors and finished floors and over-ceiling joists.

The film can also be applied around the outside of foundation walls. It can be positioned against the outside of the walls before backfilling, or it can be applied to the inside of forms having no internal bracing. Placing of the film before pouring the concrete aids in curing since it readily retains moisture. Coating of the forms with oil or shellac and waterproofing the finished wall is eliminated.

When used to cure concrete slabs, a thin layer of water is first spread then covered with a layer of the film.

Tests conducted at the University of Minnesota are reported to show that the Visqueen film meets government vapor barrier specifications with a 900% margin. Further, the material has been subjected to accelerated aging with excellent life characteristics indicated. The Visking Corp., Plastics Div., Box 1410, Terre Haute, Ind.

Cylinder assembly on "71" diesels modified by GM

Improvements recently effected in the cylinder assembly of General Motors Series "71" Diesel engines are said to provide better fuel economy, increased horsepower in some sizes and longer life.

(Continued on page 84)

Big mixer designed for short trucks

The Model M Hi-Boy Truckmixer and agitator has been designed to meet the demand for a big truck mixer that can be mounted on short wheel base and conform to axle weight limitation laws. The location of the mixer transmission reduces the truck cab to axle requirement by 20 inches and reportedly permits easy access to the transmission even when the mixer is mounted to just clear the truck cab. The 4½-cubic yard model pictured above is one of three in the Model M series rated at 4½, 5½ and 6½ cu yd capacity. All models are guaranteed to mix ½-cubic yards more than rated capacity. Blaw-Knox Co., Farmers Bank Bldg., Pittsburgh 22, Pa.

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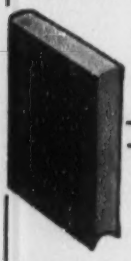

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The improvements are listed as a new cylinder liner to provide a freer flow of air into the cylinder, a new piston to increase the compression ratio and longer-life compression rings. The new liners and pistons are interchangeable with those formerly used and may be installed on engines that are now in operation in any combination as replacements become necessary.

The new cylinder liner is characterized by air-intake ports which are figure-8 in shape; the openings are larger than those used in previous liners and their number has been increased. A 32 per cent increase in the air-intake area is thus provided for better all around cylinder scavenging and more complete combustion.

Operating in conjunction with the new cylinder liner is a new, improved piston. Designed with a new combustion chamber this piston is tailored to take advantage of the better combustion available with the new liner. Long life is reportedly insured through freer heat flow from the piston crown and through increased rigidity.

The compression rings now used are of hard chrome plated steel. They are said to be tougher and more flexible than the rings formerly used and capable of delivering more hours of service. General Motors Corp., 13400 W. Outer Dr., Detroit 28, Mich.

Submersible pump designed for highway drainage work

Highway underpasses and other similar locations where heavy rainfall causes flash floods can be protected by a new pump designed to handle such problems.

It is a heavy-duty screenless-type pump with a non-clog impeller, available in 4-in., 5-in. and 6-in. discharges, with capacities up to 400, 1,250 and 2,000 gpm respectively. The water-

(*Continued on page 86*)

Rotary casts 4 tons per minute

A new rotary snow plow that mounts on most wheel-type front-end loaders operates on only 30 hp, yet is reportedly capable of plowing deeper snow than 300 hp rotaries. It is also pointed out that the rotary will plow as high as the front-end loader arms can be lifted. The plow is known as the Bros Series A and features the Bros Sno-Flyr principle and, it is said, will cast snow at a rate of three to four tons a minute. The slit-spiral design of the rotor slots assertedly makes it possible to handle hard-packed snow easily. It is claimed that in actual operation a five-yard dump truck can be loaded by a Series "A" in just 30 seconds as compared with five to ten minutes required for hydraulic front-end bucket loaders. A casting chute extension simplifies truck loading and because the operator can rotate the chute 180°, the truck can be loaded on either side or dead ahead of the plow. The plow is offered in three plowing widths—4 ft 4 in., 5½ ft and 6½ ft and is also available for mounting on four-wheel drive Jeeps. Wm. Bros Boiler and Mfg. Co., Minneapolis, Minn.

How to keep crawler parts operating longer

Replacing worn shovel parts is costly ...for example, the sprocket, tumbler and track assembly illustrated, which represents a considerable outlay.

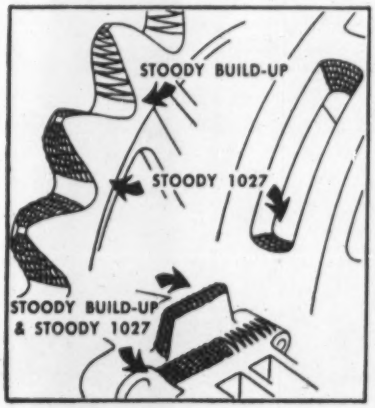
The experience of a large pipeline company operating in the West, provides a good example of maintenance procedures that cut replacement costs and save lost equipment time. Two sets of sprockets, tumblers and tracks are maintained for each backhoe. The spare set is rebuilt and hard-faced on regular shop time. It is ready for instant use when needed. When the track shows signs of slipping, the rebuilt equipment is sent out, worn parts are removed and the spares installed on location.

NUMEROUS ADVANTAGES

Work schedules in the welding department are thus smoothed out, since rebuilding and hard-facing jobs can be used as "time fillers" at the welder's convenience without overtime costs.

Shovel down-time is reduced. Only enough time is lost to pull worn assemblies and substitute the spares. Shovels are immediately put back on the job.

Although no exact record is available, careful observation over a long period of time indicates an almost indefinite increase in service life for these specific parts. The procedure has proved so successful it is now adopted as standard practice.



REBUILDING & HARD-FACING PROCEDURES

Wear patterns are the key to the most effective use of hard-facing. Worn areas of sprocket teeth, lugs and tumblers are rebuilt to within 3/16" of final size with Stoody BUILD-UP, which provides a rigid base to properly support the hard-facing alloy. A final pass of Stoody 1027 supplies good wear resistance with high impact strength. These same alloys are used on the pads to restore size and renew life.

These and other hard-facing applications are fully described in the Stoody Guidebook. Ask your Stoody dealer or write for a free copy.

STOODY COMPANY
11976 East Slauson Avenue
Whittier, California

cooled motor is mounted directly on top of the pump casing, and the entire unit is designed for submerged operation.

According to the manufacturer, the pump will handle solids up to 3½ in. in dia and is adaptable for pumping large amounts of water occasioned by highway drainage. The pumps can be installed in pits under the roadway or along the right-of-way; no pumphouse is required. The only protective housing needed is for the control center and power supply. Control systems are available with no moving parts in the pump pits.

Designed for continuous operation during flood periods, the operating parts are nevertheless not subjected to corrosion, deterioration, or injury when standing idle. It is a self-contained unit, with sealed bearings, and the special lubricant used requires change only once in every five years.

The motor, housing, drive-shaft and impeller—all of the working parts—are an integral and interchangeable unit. It is pointed out that this feature is particularly desirable in locations where a number of these pumps are installed. One interchangeable emergency motor unit can be held in reserve, and if an operating pump is damaged, the emergency motor can be installed in the casing in 30 min.

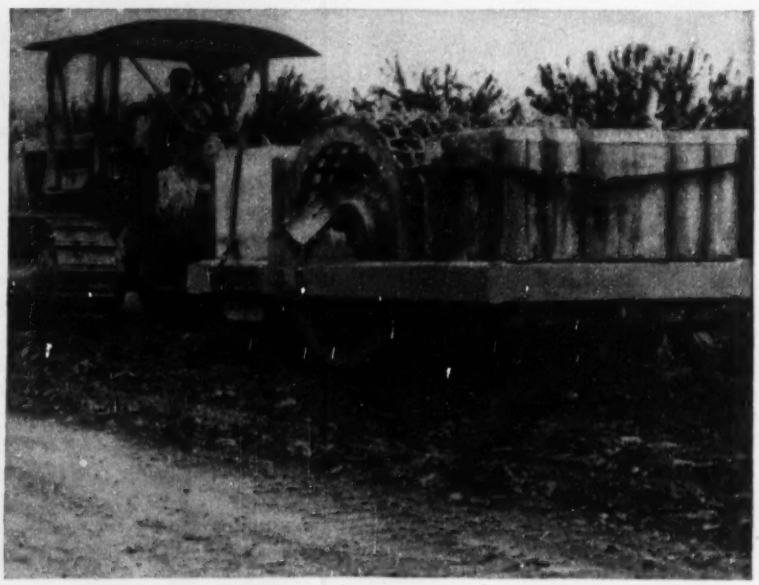
As to the pump's construction features, its non-clog impeller is mounted on a stainless steel shaft, and the sealed ball bearings are permanently lubricated. Motor windings are of special design and construction, and permanently non-corrosive. The motor housing is heavily ribbed metal, sealed to exclude dirt and water. WEIL PUMP CO., 1530 N. FREMONT, CHICAGO, ILL.

Grid roller gets cleaning blade

A redesigned grid roller permits, when required, rolling of over-optimum fills and wet spots through the addition of a positive-acting cleaner for removing any wet material that may enter the roller. The new model has a cone-shaped core to make possible mounting the cleaner blade on the frame, and the blade is adjustable to compensate for wear.

A universal hitch is adaptable to fit drawbar pins and yokes of various dimensions and heights above ground, and a pivoting tongue is used to change tracking position of the roller behind the towing unit. Three adjusting holes provide for tracking directly behind or 14 in. to either side of the unit. A retractable jack leg is located on the tongue for supporting the roller after uncoupling, and an adjustable roll scraper is mounted underneath the frame behind the rollers with standard drilled holes for easy replacement.

The grids are cast from alloy steel and heat treated. Each segment has the appearance of woven open-mesh made by interlacing 1½-in. bars on 5-in. centers. Net opening between bars is



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Net weight of the Grid Roller and frame is 12,400 lb and gross weight, including ballast and cleaner, is 30,000 lb.

Drawings for making the T-shaped reinforced concrete weights are furnished. HYSTER CO., PEORIA 1, ILL.

Better concrete reported with use of new additive

Berylex, a chemical cementing compound, developed in Germany prior to World War II is now the property of an American company.

This company reports that the product was used to make salt-proof roads and overnight repairs on roads, durable acid-resistant industrial floors, quick re-topping of slabs without shrinkage or loosening, quick gun emplacements, waterproof tunnels, and reinforced concrete which would hold its bond even under the impact of high explosives.

Since acquiring the formula, the American manufacturer has developed more uses for the product. It is claimed that Berylex brings about many improvements in concrete, among them: considerable increase in the ultimate strength; high early strength; qualities of air-entrainment as to durability and workability; faster hardening and slower curing than standard concrete; extra hardness—both surface and internal; and easier finishing. The addition of Berylex to cement does not change the method of mixing. BERYLEX NATIONAL SALES CO., RENO, NEV.

Oil-burning heater designed for limited headroom uses

A new oil-burning heater known as the Hy-Lo BJR Model salamander has been designed for use where headroom is limited. It has a shorter stack and larger diffusion hood than the Regular Type Hy-Lo salamander; the BJR Model measures 53¾ in. in height as compared to the Regular's 62¾ in. height.

Both types are equipped with the patented return gas stack by which the consumed gases are returned to the bowl. This action is said to produce better combustion and eliminate carbon.

On ½ to 1 gph of any good grade fuel oil, the salamander reportedly produces from 70,000 to 140,000 Btu, lights with a match and burns from 10 to 20 hours on one filling. SCHEU PRODUCTS CO., P.O. Box 262, UPLAND, CALIF

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EDITORIALS

The quest for better city government

A SUPERGOVERNMENT AGENCY to solve the major transportation, water-supply and pollution-control problems of the New York metropolitan region was proposed last week to an audience of city planners, by Luther Gulick, City Administrator of New York City. An extension of the authority idea, the proposal will no doubt be intriguing for a good many areas of the country. But injection of a level of regional government into the municipal administrative system would encounter so many difficulties, that the principal value of the proposal will probably be to focus thinking on ways to use existing agencies better. And that will be well worthwhile.

In Mr. Gulick's plan, the supergovernment would take over the operations of the Port of New York Authority and of the several bridge authorities in New York City, and would add those relating to interstate rapid transit, water supply and stream sanitation. Parts of New York, New Jersey and Connecticut would be included in the area served.

Such a plan is certain to get receptive consideration by those who have struggled for years to find some practical way to provide better connections between the commuting rail lines in New Jersey and New York City's subway system. Yet the character of some of the functions that Mr. Gulick proposes to assign to the new agency might defeat his purpose, unless the new agency were given taxing powers.

Granting of taxing power to a supergovernment would probably be viewed with suspicion by state legislatures. Such a grant was not made to the Port of New York Authority when it was set up by the states of New York and New Jersey. And as a consequence it was not able to accomplish much until the two states turned over to it the highly profitable Holland Tunnel. The Port Authority's success during the years since then has been due to a wise policy of not expanding its activities into unprofitable undertakings beyond what could be safely carried by its assured income from profitable ventures.

Suburban rapid transit and pollution control are not in the profitable class. Additional water supply probably would not be either. And the initial investment in any of the badly needed new facilities would be very large before any return could be expected. Hence any supergovernmental agency without some taxing power in the regions to be served would be handicapped from the start.

Reasonable progress is being made toward freeing the streams and tidal waters of the New York metropolitan region through the operations of existing agencies. Also, any powers to tap sources of water supply now beyond the reach of such existing agencies as the North Jersey District Water Supply Commission could easily be granted by interstate agreement.

Finally, in the field of interstate rapid transit, more use of the latent possibilities of the Port Authority should be explored before a new super agency is set up. Its current experimental plan to use buses to carry commuters from a parking field in New Jersey through its tunnels to New York may prove to be a better and less costly plan than the long-discussed underground rapid transit lines linking rail terminals in New Jersey to New York's subways.

So it would seem clear that until all of the possibilities of existing agencies have been fully developed, a new supergovernment is not needed. And what is true of New York would be equally true elsewhere.

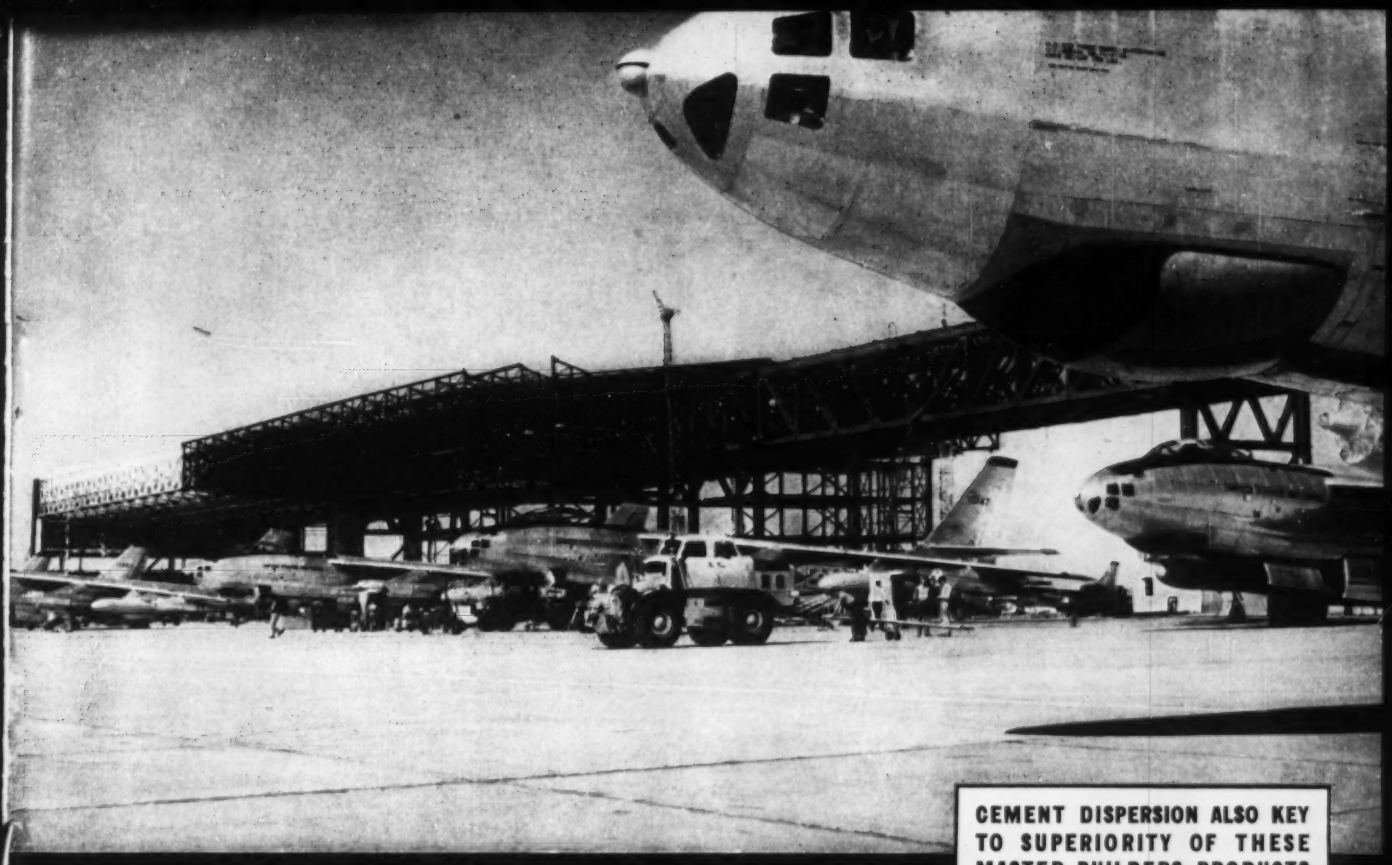
Don't forget the county engineer

IN SEEKING better governmental administration there is too frequently a tendency to overlook the county and the contribution it can make in improved facilities both around cities and in strictly rural areas. And the key to these improvements is the county engineer.

Almost completely unheralded and too seldom adequately rewarded, many county engineers have nevertheless upgraded their jobs and raised their own stature far beyond what even their fellow engineers in other parts of the profession have appreciated. This would have been conclusively demonstrated to anyone who attended the sessions of the County and Local Roads Division of the American Road Builders Association in Columbus, Ohio, last month. From the character of papers, the ability of the speakers and the attentiveness of the audience, the meeting could not be distinguished from any other scientific gathering—except that it was better than some.

In their efforts to improve their services, county engineers need more sympathetic cooperation from the other levels of government. Actually it is to the self interest of federal, state and municipal officials to make an ally of the county engineer because of the growing necessity for integrating the primary and secondary road nets and for using modern engineering and construction techniques all along the line. County engineers particularly require aid in establishing the unit system of operation in which all township and country roads are placed under their management, and in which the boards of commissioners give them a free hand in establishing progressive administrative practices. In states where this has been done, results have been uniformly good.

County engineers, when they have had the chance, have shown they can handle enlarged responsibilities. They have made their jobs attractive to competent technical personnel, and they have made their counties useful, progressive governmental units. The situation is one that should be more universal.



Boeing Airplane Co., Wichita, Kansas. Pozzolith Concrete used in apron and hangar Consltg. Engr. — Wilson & Co., Salina, Kansas; Hangar Contr.—Manhattan Construction Co., Inc., Muskogee, Okla.; Hangar concrete supplied by Walt Keeler Concrete Co., Wichita, Kansas; Apron Contr.—Peter Kiewit & Sons Co., Wichita, Kansas, who also produced the concrete for apron.

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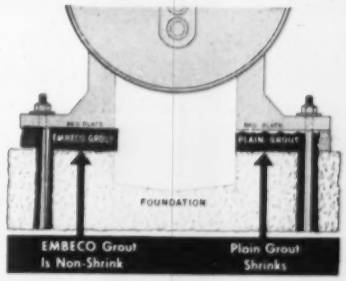

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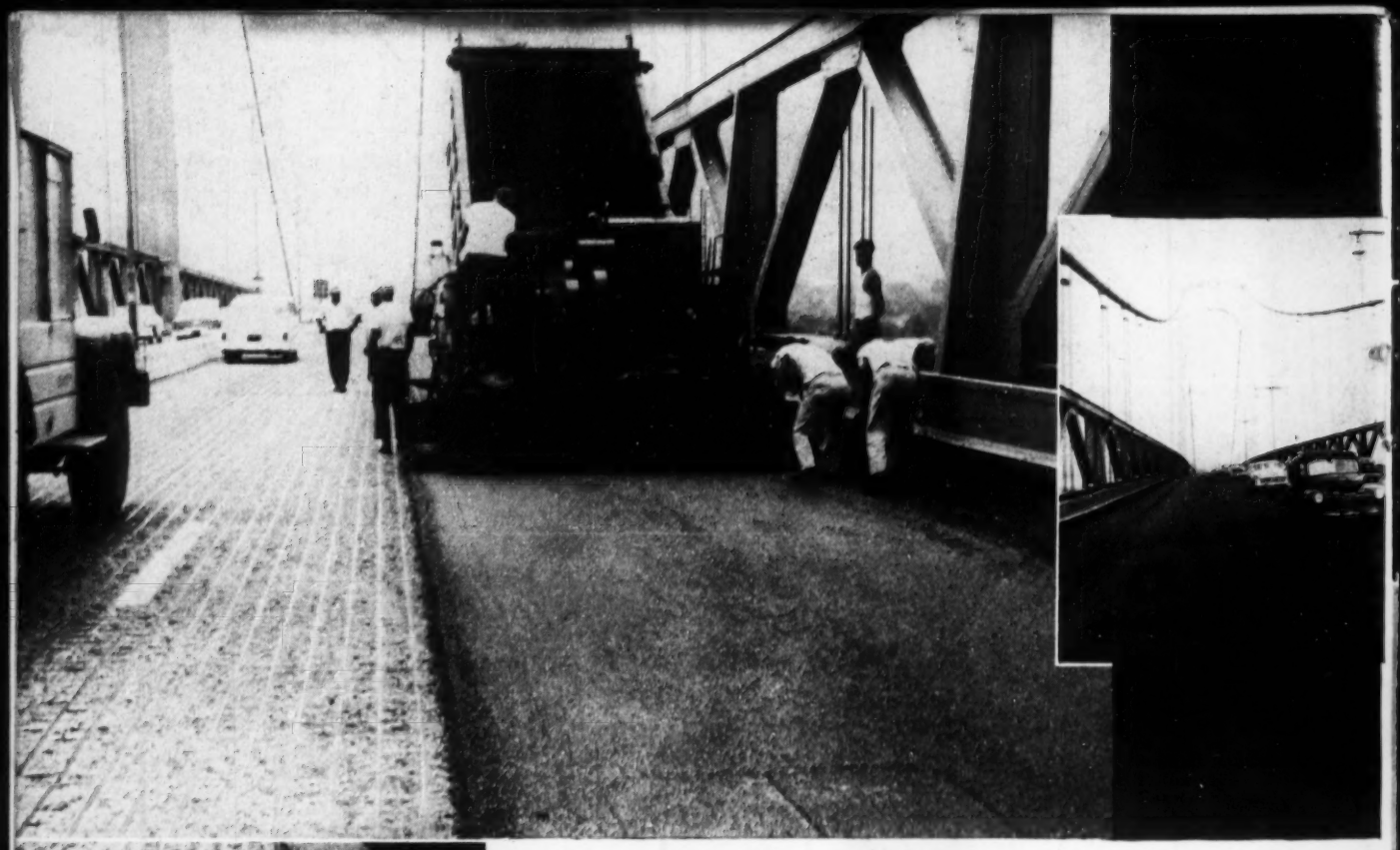

Close-up of exposed steel grid in bridge floor and the new Texaco Asphaltic Concrete wearing surface.

Spreading seal coat of asphalt-treated stone dust while the asphalt pavement was being rolled.

Traffic will average 75,000 vehicles a day on this resilient Texaco Asphalt pavement

The Bronx-Whitestone Bridge links two of New York City's five boroughs, Bronx and Queens. More than 23,800,000 vehicles crossed the bridge last year, a daily average of 65,000, with a 24-hour peak of 114,000 cars and trucks.

During July of this year, a hot-mix Texaco Asphaltic Concrete wearing surface was constructed on this bridge. Careful planning of working hours resulted in a minimum of inconvenience to traffic. Prior to laying the new asphalt surface, the existing pavement was chipped off down to the steel grid in the bridge floor, as shown by the photos. The resilient asphaltic concrete surface was then laid to a compacted thickness of 1½ inches.

It was essential that the new pavement be opened to traffic immediately after it had been rolled. Application of a seal coat of asphalt-coated stone dust during the rolling operation eliminated any tackiness.

The answer to your own paving problem may be a heavy-duty pavement of the hot-mix Texaco Asphaltic Concrete type, or it may be one of the low-cost Texaco Asphalt surfaces designed for secondary roads and streets. Texaco Asphalt Cements, Cutback Asphalts and Slow-Curing Asphaltic Oils offer the road builder a variety of answers to the paving problem. Helpful information regarding all of these types is supplied in two booklets which you can obtain without obligation by writing our nearest office.

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